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MATÉ, OR PARAGUAY TEA.

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*Read at the Pharmaceutical Meeting, April 16, 1878.*

*Ilex Paraguayensis*, Yerba Maté, or Paraguay Tea, is a small tree belonging to the family of the Celastrineæ. Under the name of maté the prepared leaves of this tree have been employed as a beverage in South America from the earliest period, and in some portions of that country even now, to the almost entire exclusion of China tea. Maté having attracted considerable attention in Europe within the last few years, the writer embraced the opportunity afforded by the Centennial Exhibition to obtain authentic specimens, which were exhibited by the government of the Argentine Republic, and furnished by the provincial commission and private individuals of the province of Corrientes and the adjoining territory of the Missions in that republic. Although maté is but little known and of comparatively small importance in this country, its immense production and use in South America renders it deserving of greater attention than has been hitherto given to it. As several papers more particularly referring to its general use and commercial importance have been recently published, the direction of this paper will be principally confined to its proximate composition and the difference therein which the several samples may show.

According to Dr. Mantegazza, maté is prepared as follows: The entire trees are cut down, and the small branches and shoots are taken with the leaves and placed in the *tatacúa*, a plot of earth about six feet square, surrounded by a fire, where the plant undergoes its first roasting. From thence it is taken to the *barbacúa*, which is a grating supported by a strong arch, underneath which burns a large fire; here it is submitted to a particular torrefaction, determined by experience, which develops the aromatic principle. Then it is reduced to a coarse powder in mortars formed of pits dug in the earth and well rammed.

It is next put into fresh bullock skins, well pressed, and placed in the sun to dry. Other writers have given accounts of its preparation differing in the minor points, but all agreeing in the main.



*ILEX PARAGUAYENSIS*, Sc. Hil.

Flowering branch and gourd infusion pot.

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The following is a description of the samples and their history so far as it was possible to ascertain it :

No. 1. Exhibited by M. Vera ; packed in bag made of wolf skin, weight about 4 kilos, color bright greenish-yellow, odor not as aromatic as some of the other samples, almost entirely free of twigs, and appears to have been prepared from very young leaves dried with little if any artificial heat.

No. 2. Exhibited by T. B. Appleyard ; size of package and general appearance and character of this sample very much like No. 1.

No. 3. Exhibited by I. Arrillaga ; weight about 8 kilos, packed in the entire skin of a tapir ; this maté was rather coarse, containing many twigs, some of which were charred slightly ; color a dull brownish-green, odor very aromatic and balsamic. This sample is believed to have been prepared by the Guarani Indians of the northern part of the Missions.

No. 4. Exhibited by the Provincial Commission ; weight 15 kilos, packed in the entire skin of a tapir, general appearance and character of this sample like No. 3.

No. 5. Exhibited by the Provincial Commission ; weight 10 kilos, packed in the entire skin of an animal. This sample was very unevenly powdered, and much of it quite coarse ; it also contained a large proportion of twigs somewhat charred, and much sand ; in color it resembled No. 4 ; the odor was also similar to that sample, but much weaker ; its general appearance indicated the most primitive mode of preparation. This sample was from the department of Itaty on the Parana.

No. 6. Exhibited by the Provincial Commission ; packed in small skin bag, weighing 3 kilos. This maté was coarsely powdered, very dark in color, odor quite aromatic and balsamic, and contained many fruits and twigs. It was also from Itaty.

No. 7. Exhibited by the Provincial Commission ; packed in skin bag, weighing 65 kilos. This maté was finely powdered, of a bright color, aromatic odor, and contained only a small proportion of twigs. This sample was from the northern part of the territory of the Missions, which furnishes the most celebrated maté. This territory is formed by that part of the extinct empire of the Jesuits, which was inherited by the Argentine Republic. Among the forest trees which grow admirably in the Missions that which produces the Yerba Maté merits a special mention. Near the river Uruguay it forms extensive

forests, which are the source of a most important industry, whose principal centre is in the Villa de San Xavier.

The appearance and character of the samples indicate that there are at least three sorts of powdered maté. First, that made from the young leaves; samples Nos. 1 and 2 appear to be of this sort. Second, that prepared by the original primitive method of the natives, and which exceeds both of the other kinds in aromatic properties; of this sort Nos. 3, 4, 5 and 6 appear to be samples. Third, that prepared with more care and with the aid of modern furnaces for its torrefaction, and mills for its pulverization; of this sort No. 7 appears to be a sample.

The following experiments were all performed with the utmost care, the method of examination adopted was uniformly applied to all the samples, the air-dried maté was in each case powdered and kept in a well stoppered bottle, to be drawn from as required. The results shown by the first table were obtained by subjecting 10 grams of maté to the separate action of each of the different solvents and processes as there shown. The results shown by the second and third tables were obtained by treating 10 grams of maté successively with the solvents in the order there given, the difference being that in the second table the maté is last treated with boiling water, and in the third table that solvent is the first to which it is subjected.

TABLE No. I.

10 grams of Maté treated separately with	SAMPLES.						
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Boiling water, . . . .	3'37	3'65	3'52	3'17	3'09	3'31	3'16
Petroleum benzin, . . .	0'58	0'45	0'41	0'57	0'36	0'45	0'41
Chloroform, . . . . .	0'90	0'75	0'71	0'89	0'51	0'66	0'73
Alcohol, sp. gr. '822, . .	3'05	3'62	3'83	3'12	3'01	3'24	3'26
Alcohol, sp. gr. '941, . .	3'49	3'77	3'84	3'23	2'98	3'33	3'36
Tannin, . . . . .	1'55	1'60	1'60	1'60	1'28	1'00	1'30
Caffeina, . . . . .	0'03	0'02	0'06	0'10	0'08	0'16	0'14
Total ash, . . . . .	0'65	0'58	0'55	0'50	1'09	0'73	0'64
Ash soluble in water, . .	0'18	0'15	0'20	0'16	0'12	0'17	0'18
Ash insoluble in water, .	0'47	0'44	0'35	0'34	0'4	0'56	0'47
Ash soluble in HCl, . . .	0'36	0'40	0'32	0'31	0'53	0'44	0'40
Sand, . . . . .	0'11	0'04	0'03	0'03	0'41	0'12	0'06
Moisture in air-dry Maté, .	0'75	0'85	0'80	0'75	0'62	0'75	0'71



TABLE II

10 grams of Maté successively treated with	SAMPLES.						
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Petroleum benzin, . . . .	0.58	0.45	0.41	0.57	0.36	0.45	0.41
Chloroform, . . . .	0.22	0.24	0.22	0.27	0.21	0.25	0.22
Alcohol, sp. gr. .822, . . .	1.57	2.32	2.49	1.70	1.78	1.90	2.02
Alcohol, sp. gr. .941, . . .	2.12	1.82	1.87	1.84	1.81	1.73	1.68
Boiling water, . . . .	0.27	0.24	0.21	0.22	0.20	0.25	0.24
Ash, . . . .	0.32	0.38	0.29	0.24	0.92	0.40	0.38

TABLE III.

10 grams of Maté successively treated with	SAMPLES.						
	No. 1.	No. 2.	No. 3.	No. 4.	No. 5.	No. 6.	No. 7.
Boiling water, . . . .	3.37	3.65	3.52	3.17	3.09	3.31	3.16
Petroleum Benzin, . . . .	0.59	0.50	0.53	0.61	0.40	0.43	0.46
Chloroform, . . . .	0.16	0.17	0.16	0.20	0.15	0.17	0.19
Alcohol, sp. gr. .822, . . .	0.39	0.44	0.52	0.48	0.38	0.31	0.41
Alcohol, sp. gr. .941, . . .	0.19	0.17	0.32	0.18	0.29	0.16	0.21
Ash, . . . .	0.36	0.36	0.31	0.28	0.92	0.44	0.40

*Treatment with Boiling Water*, Table No. I.—10 grams of powdered maté were boiled half an hour with 100 cc. of water, the decoction poured off, and the process repeated four times with the same quantity of water; the decoctions were mixed, filtered, and evaporated on a water-bath to dryness. The extract obtained was of a brown color in mass, yellow in powder, of slight odor and mild bitter taste. It contained caffeina, tannin, gum, starch and pectin.

The extract yielded to boiling water by 10 grams of maté after treatment as in Table No. II, was, when powdered, of the color of unburnt amber, inodorous and tasteless; it consisted principally of starch and pectin.

*Treatment with Petroleum Benzin*, Table No. I.—10 grams of pow-

dered maté were exhausted by percolation with petroleum benzin, and the benzin allowed to evaporate spontaneously; the result was a thick greenish black oily extract; the exhausted maté after drying was free of the benzin odor, and retained but little of its own natural odor; the extract after a long time was not entirely free of the odor of the benzin. This extract was found to contain chlorophyl, resin, wax and fatty matter, and probably a small quantity of volatile oil, though none could be separated; it contained no tannin or caffeina.

After the preparation of a fluid extract of maté by percolation with alcohol, sp. grav. .941, the residue was dried and 1,000 grams of it exhausted by percolation with petroleum benzin; upon spontaneous evaporation of the percolate 43 grams of dark green extract remained; a portion of this having the consistence of castor oil was separated, and a thicker portion, which adhered to the bottom of the dish, was washed with aqua ammoniæ as long as it removed anything, and then washed with dilute hydrochloric acid. There now remained 3.70 grams of a black mass, very adhesive and elastic, and burning with the well-known odor of caoutchouc. This experiment proves that the substances soluble in petroleum benzin are not removed from maté by alcohol of the specific gravity .941, and a comparison of the figures in the petroleum benzin line in the tables also shows that boiling water fails to remove the same substances.

*Treatment with Chloroform*, Table No. I.—10 grams of powdered maté were percolated with chloroform until exhausted, and the chloroform evaporated spontaneously; the extract obtained was of a soft waxy consistence, fragrant odor and dark green color; it contained wax and fatty matter, chlorophyl, resin and caffeina, but no tannin.

The extract obtained by chloroform from 10 grams of maté after treatment as in Table No. II, was pulverulent, of a dark green color and slight fragrant odor; it contained resin and caffeina, but no tannin.

The extract yielded to chloroform by 10 grams of maté after treatment as in Table No. III, was pulverulent, of a grayish olive color, and almost odorless; it contained resin and chlorophyl, but no tannin or caffeina.

*Treatment with Alcohol*, sp. grav. .822, Table No. I.—10 grams of powdered maté were exhausted by percolation with alcohol, and the alcohol driven off on a water-bath. The extract obtained was of a soft consistence, heavy narcotic odor, and deep green color; it con-

tained fatty matter, chlorophyl, resin, tannin and caffeine. A portion of the residue of the maté, after percolation with alcohol, was dried and percolated with petroleum benzin; the percolate was colorless, and upon evaporation no extract whatever was obtained, proving that alcohol of sp. grav. .822 dissolves all the constituents of maté which are soluble in petroleum benzin. Another portion of the residue from percolation with alcohol was percolated with chloroform; a brownish-green percolate was obtained, which upon evaporation yielded a small quantity of hard, green, wax-like matter, readily fusible, and when burnt giving off the odor of caoutchouc.

The extract yielded to alcohol by 10 grams of maté after treatment with petroleum benzin and chloroform as in Table No. II, was of a soft consistence, greenish brown color in mass, and transparent bright yellow color in thin layers, the odor fragrant and very agreeable, the taste bitter and acrid; it contains resin and tannin, but no caffeine.

The extract obtained by alcohol from 10 grams of maté after treatment with boiling water, petroleum benzin and chloroform, as in Table No. III, was of a dark green, almost black, color, easily powdered, yielding a pale greyish-green powder, nearly inodorous, and of a slight bitter taste; it contained tannin, but was entirely free from caffeine.

*Treatment with Dilute Alcohol*, sp. grav. .941, Table No. I.—10 grams of powdered maté were exhausted by percolation with dilute alcohol and the resulting tincture evaporated to dryness on a water-bath. The extract obtained was of a brown color, readily powdered, yielding a light yellow powder, of slight odor, and bitter, astringent taste; it contained resin, caffeine and tannin.

The extract yielded to dilute alcohol by 10 grams of maté after treatment as in Table No. II, was of a dark brown color, readily powdered, yielding a brownish-yellow inodorous powder, of slight bitter, astringent taste; it contained tannin and gum, but no caffeine.

The extract obtained by dilute alcohol from 10 grams of maté after treatment as in Table No. III, was of a light brown color in mass, dull yellow when powdered, inodorous and almost tasteless, the presence of tannin shown, but it was entirely free of caffeine and resin.

*Tannin.*—For the estimation of the tannin the following process was employed (for additional details of similar process, see Proceedings of the American Pharmaceutical Association, 1876, page 513, and

"American Journal of Pharmacy," 1877, page 388.) Of each sample of maté, finely powdered, 10 grams were taken and separately treated; first by percolation with petroleum benzin; this removed most of the green coloring matter and none of the tannin, as the percolate upon evaporation and treatment with water failed to give to the proper reagents any indication of the presence of tannic acid. The maté was removed from the percolator, and, after drying, repacked and treated with alcohol of seventy-five per cent. until the percolate passed free of color; then the residue was removed to a flask and boiled with several successive portions of alcohol of the same strength, the several tinctures mixed, when cold filtered and the filter washed with alcohol. The alcohol was then driven off on a water-bath, and the solution made up to the previous measure with distilled water, and a slight excess of basic acetate of lead added, which threw down an abundant bright yellow precipitate. This was well washed with distilled water, decomposed by sulphuretted hydrogen, and after heating on a water-bath to remove excess of the sulphuretted hydrogen, the sulphide of lead was removed by filtration and the filter well washed with distilled water. The filtrate was a clear solution of an intense yellow color, and upon being evaporated on a water-bath to dryness yielded a light-brown amorphous mass, fusible by heat, and which, when powdered, was of a buff color; its solution strongly reddens litmus paper. The quantity obtained from each sample is shown in table No. I. It will also be observed that those samples containing the most tannin contained the least caffeine. The following is a description of the behavior of this peculiar tannic acid with different reagents:

With ferric salt it gives a bright green at first, turning to brown on standing and a brown precipitate; with ferrous salts no change at first, becomes green on standing and deposits very dark olive precipitate; with fixed alkalies transparent dark yellow color, unchanged by heat, no precipitate; lime water gives a transparent pure yellow, and on standing a grayish brown precipitate; aqua ammoniæ gives a transparent intense yellow, almost brown, no precipitate; acetate of copper gives a light-green precipitate, not soluble in excess of precipitant; sulphate of copper gives no precipitate in the cold, but when heated a brown precipitate is given; ammonio-sulphate of copper slowly precipitates in the cold, and at once if heated; nitrate of silver is reduced by the

aid of heat to the specular form; auric chloride is decomposed in the cold; barium nitrate gives a faint but immediate yellowish-white precipitate; stannous chloride gives a white precipitate; tartrate of antimony and potassium produces no precipitate; sulphate of quinia and sulphate of cinchonina both produce white precipitates; gelatin gives no precipitate; acetate of lead gives a yellowish-white precipitate; permanganate of potassium in solution is immediately decolorized; molybdate of ammonium produces a brownish-red, which is changed to yellow by oxalic acid; morphia gives a slight precipitate on standing; strychnia gives a white precipitate; aconitia gives no precipitate; veratria with hydrochloric acid gives a white precipitate; salicin and santonin give no precipitate; piperina with hydrochloric acid, color lightened but no precipitate; sulphuric acid, aided by heat, changes a concentrated solution to a deep red.

*Caffeina.*—The following process was employed for the determination of the quantity of *caffaina*: 10 grams of powdered maté and 4 grams calcined magnesia were boiled for half an hour with 500 cc. distilled water, and filtered while hot, the residue and the filter returned to the flask, 500 cc. water added, and again boiled for twenty minutes; then filtered and boiling water poured on the filter until the filtrate passed colorless and tasteless. The filtrate was then evaporated at a moderate heat over a naked fire until reduced to 200 cc., and then 10 grams of powdered glass and 1 gram calcined magnesia were added, and the evaporation continued on a water-bath to dryness. The dry residue was then finely powdered and placed in a small flask with 30 grams chloroform, and boiled for a few minutes, and then filtered through a funnel, the neck of which was closed with cotton, and over this was placed a layer of powdered glass. The residue in the flask was treated with fresh portions of chloroform until the *caffaina* was all dissolved out. The chloroform was then allowed to evaporate spontaneously in a weighed capsule, yielding the *caffaina* in fine silky form on the bottom and sides of the capsule—perfectly white if the chloroform solution had been allowed to cool before filtration, but if filtered hot the *caffaina* was very slightly tinted of a greenish color. The amount of *caffaina* obtained from each sample will be found in table No. I.

*The Ash.*—The determination of the total, the soluble and the



insoluble ash was made as follows: 10 grams of maté was burned and the resulting ash weighed, then boiled in a little distilled water, and filtered while hot through a weighed filter, and the filter washed with boiling distilled water. The filtrate, upon evaporation and ignition, gave the weight of the soluble ash, which was verified by drying the the filter and its contents, and subtracting the weight of the filter from the total weight. The insoluble ash was then treated with hydrochloric acid, and after washing by decantation, the insoluble portion was dried, ignited and then weighed, the loss in the weight being taken as the quantity soluble in the acid. The portion insoluble in the hydrochloric acid was principally sand.

Owing to the usual mode of preparing maté, it is rendered certain that the ash is not all from the constituents of the leaves themselves, but partly from earthy matter introduced during the process of preparation.

*Pharmaceutical Preparations.*—The following preparations of maté are suggested: The simple infusion which is the form in which it is always used in South America; a solid extract prepared with alcohol of sp. grav. .822, and a fluid extract prepared with alcohol of sp. grav. .941, in such proportion that when finished its weight will be equal to the weight of maté used in its preparation. A considerable quantity of fluid extract prepared by this formula has been used in debility and in various derangements of the nervous system, generally with satisfactory results.

The reputed therapeutical properties of maté have been fully stated in a number of heretofore published papers, some attributing the most deleterious effects to its continued use, and others lauding it to the utmost limit of credibility, almost equaling the marvelous statements made of the action of the somewhat similar substance, Coca. In regard to maté, however, the writer is fully convinced that it does really possess properties which render it worthy of careful therapeutical investigation.

The thorough desiccation it undergoes in its preparation, and the compact and hermetical character of the packages in which it is contained, tend greatly to the preservation of whatever virtues it may have originally possessed.



NOTE ON THE ALKALOID SOPHORIA.

By H. C. Wood, M.D.

Some months since I gave notice<sup>1</sup> of the finding of an alkaloid having toxic properties in the bean of *Sophora speciosa* of Texas. During the past winter I have made some further study of the bean, which, although it does not exhaust the subject, has led to results worthy of publication. Other pressing engagements will prevent my giving more time to the matter, and it affords me pleasure to turn it over to the far abler hands of Professor Wormley, who hopes to make a thorough investigation. This much of apology. In the present state in which it was obtained *sophoria* is a transparent liquid, having a highly alkaline reaction, freely soluble in water, somewhat so in ether and very freely so in chloroform. When quite pure it is probably colorless, but, like other liquid alkaloids, it is very prone to undergo change, and I have never seen it free from a brownish tint. Its chloride crystallizes very readily, and appears to be a stable salt. With chloride of platinum it gives beautiful and peculiar crystals. When an acid is added to its watery solution drop by drop, very marked turbidity is produced, clearing up as more of the acid is put in. Crystallization is favored by not allowing the reaction of the solution to become distinctly acid; and there is reason for believing that the crystalline salt is basic, although I cannot speak positively upon this point. The most characteristic test is that, with the tincture of the chloride of iron, a deep blood-red color being produced.

I have tried various processes for preparing this alkaloid, but the only one which has yielded me any results is as follows: The powdered beans are first well moistened with strong alcohol and allowed to stand for two hours, the object being to coagulate the albuminous and gummy principles of the bean as much as possible. In order to avoid the extraction of the very abundant coloring matter of the shell, water not too strongly acidulated with muriatic acid is added in considerable quantity after the second hour, and maceration allowed to continue for a week. The expressed liquid is concentrated on a water-bath, and when cold rendered decidedly alkaline with carbonate of sodium, and agitated with an equal bulk of chloroform. On standing, the mixture separates into two layers, the lower being an emulsion of chloroform.

<sup>1</sup> See "Amer. Jour. Phar.," Jan., p. 33.

This, after twenty-four hours, is removed by decantation, or with a pipette, and the supernatant liquid treated with chloroform, as before.

The two emulsions of chloroform having been mixed, are thoroughly agitated with a half bulk of water acidulated with muriatic acid. By this procedure the alkaloid is more or less perfectly reconverted into the stable chloride. The chloroform is then by distillation recovered, and the mixture evaporated at a low temperature to the consistency of a thick syrup, care being exercised that the reaction be at all times decidedly acid. To the syrupy liquid strong alcohol is added, and the precipitated gum separated by filtration. The clear liquid is then evaporated upon a water-bath until all the alcohol is driven off and an impure solution of the chloride obtained. This is rendered strongly alkaline with carbonate of sodium, and extracted twice with an equal bulk of chloroform. The chloroform now separates readily, or by means of some of the manœuvres known to every worker in alkaloids, can readily be coaxed into doing so. It is then allowed to evaporate spontaneously. The impure alkaloid left behind is to be purified by solution in a small quantity of water acidulated with muriatic acid, filtering, rendering strongly alkaline with carbonate of sodium and extracting with chloroform. It is probable that this process would be not only simplified, but also improved by extracting the first concentrated infusion with strong alcohol, and thereby avoiding the first use of chloroform. The process is, however, here given as it was practised.

When given to frogs this alkaloid produced the symptoms which I detailed in my previous note. I found it to act much less powerfully upon mammals than I expected. Three grains of it hypodermically failed to very seriously affect a dog, but killed a cat in a short time.

### EMULSIONES OLEOSÆ.

BY LOUIS VON COTZHAUSEN, PH.G.

(*Read at the Pharmaceutical Meeting, April 16, 1878.*)

In oil emulsions oil and water are mixed uniformly by means of gum, a mixture of gum and sugar, the yolk of eggs or alkalies. If properly made, there is neither any uncombined oil nor a separation into layers perceptible. They are universally considered more palatable, more acceptable to the stomach and of a nicer appearance than shake-mixtures, and thus combine the virtues of efficacy and elegance. There

are few preparations to which as little attention is devoted by the average druggist, in which he is less particular and skilled, and which he considers of minor importance, not considering that a poorly-made emulsion will certainly injure his reputation considerably, showing either his incompetency or his carelessness, or a little of both; while, on the other hand, if properly made, an oil emulsion will prove a splendid card for the pharmacist who dispenses it. We should always endeavor to give our preparations an elegant appearance, as long as it will not interfere with their therapeutical effects, but never follow the example of those who (*f. i.*, by filtering cloudy solutions containing insoluble ingredients) sacrifice the medicinal virtues rather than dispense an unsightly preparation. Physicians quite frequently, objecting to the presence of acids in solutions, or of gum or any other emulsionizer in mixtures containing oil and water, prescribe shake mixtures. In such cases, of course, we are not authorized under any consideration to endeavor to improve upon their recipe by additions of our own; while, on the other hand, when the practitioner desires an elegant and effective medicine it is our duty to try our best to furnish a perfect preparation. Looking over a prescription file we often notice that the doctor leaves it for us to decide how much of some ingredients is necessary to obtain a certain result, and particularly how much gum or other emulsionizer is required to prevent a separation of oil in a mixture. I happened to be present during a discussion between two druggists, one of whom claimed that an emulsion could be made by triturating the whole amount of oil prescribed, gum arabic and a certain portion of water, thrown together into a mortar at once, while the other considered this ridiculous, stating that every apprentice knew that it was necessary to form a mucilage first with gum arabic, sugar and some water, and then add the oil and balance of the water gradually. The particular oil they had reference to was *Oleum Morrhuæ*. This induced me to make the following experiments, emulsionizing codliver oil, copaiva, castor oil and oil of turpentine, respectively.

1. In making 5 ozs. of emulsion of codliver oil, let us follow the directions of the "Pharmacopœa Germanica," which orders *emulsiones oleosæ* to be made with 2 parts of oil, 1 of pulverized gum arabic and 17 (seventeen) parts of water, unless otherwise directed by the physician. I took *ol. morrhuæ*, fʒiv; *pulv. gum acaciæ*, ʒii; *aqu. dest.*, fʒiv, poured the oil and water on the gum in a mortar, triturated them

well for a few minutes, when a good emulsion was formed, and then added sufficient water to make f $\bar{3}$ v. This emulsion remains unchanged after keeping it six weeks at a constant temperature of 70°F.

2. I then reduced the quantity of water one-fourth, mixing at once ol. morrhuæ, f $\bar{3}$ iv; powd. gum arabic,  $\bar{3}$ ii; aqu. dest., f $\bar{3}$ iii, and then diluted with the balance of water; the result was the same. This is the favorite method of most German apothecaries, and is considered by them better and surer to bring success than the first. I have made very many emulsions by it with various oils during a number of years, and never failed. There are now on hand four emulsions containing 50 per cent. of codliver oil, castor oil, turpentine and copaiva, respectively, made by the second method about four weeks ago. So far they are still, as in the beginning, elegant in appearance, and show no inclination of spoiling or separating, although kept at a constant temperature of 70°F. Emulsions containing 50 per cent. of oil, made by the first method about two weeks ago, likewise appear unchanged so far.

3. A large proportion of gum is not objectionable in most emulsions, as *f. i.* copaiva emulsions, preventing the latter from having a too strong purgative effect; in others, however (*f. i.* castor oil emulsion), care must be taken, as a large proportion of gum would counteract the effect of the oil to a certain extent. I therefore reduced the quantity of gum arabic to one-half of its former quantity, thus making the proportions oil 4 parts, gum arabic 1 part, water 3 parts. Emulsions of codliver oil, castor oil, copaiva and oil of turpentine, made in this proportion, at first presented as elegant an appearance as those containing double the quantity of gum, and remained unchanged for three days, then the emulsion of copaiva began to separate into two layers, the lower one being only about one-fifth of the whole mixture; on being shaken they readily reunited, again forming, apparently, a perfect emulsion, which, however, began to separate again in the course of 24 hours. The emulsion of codliver oil began to separate a little at the end of four days, that of castor oil after six weeks, while the turpentine emulsion is still unchanged.

4. An attempt to reduce the amount of gum to one-fourth the original quantity, so as to bring the proportions—oil 8 parts, water 6 parts and powd. gum arabic 1 part, proved successful with codliver oil, turpentine and castor oil, but gave an unsatisfactory result with copaiva, even after considerable constant trituration. The emulsions of cod-

liver oil, turpentine and castor oil separated on standing for twelve hours, not showing any separated oil globules floating on top, but two distinct layers, the upper one of which still retained the appearance of a perfect emulsion, while the lower one was thinner and lighter in color; shaking slightly again mixed them perfectly. This proves that  $\text{ʒi}$  of gum arabic to the ounce of oil will only answer satisfactorily when the emulsion is to be used in a short space of time.

5. An emulsion made by shaking together in a bottle equal parts of codliver oil and of the officinal mucilage of gum arabic was a perfect success, not separating in the least. After standing for three weeks and two days, a separation into layers slowly commenced.

6. Cod-liver oil,  $\text{fʒi}$ , the yolk of one egg and  $\text{fʒvi}$  of aq. dest., mixed intimately by trituration, yielded a yellowish-white perfect emulsion, which could be diluted without separation, and remained unchanged for seven hours. It then separated into two layers, which reunited on shaking. Oil emulsions made by any of the mentioned processes will bear dilution with water, and the addition of syrups or tinctures after being perfectly combined.

7. Parrish's formula for codliver oil mixture reads as follows: Take of codliver oil  $\text{fʒvi}$ , lime-water  $\text{ʒix}$ . To the lime-water in a pint bottle add the oil, and shake, etc. I mixed  $\text{fʒvi}$  of cod-liver oil and  $\text{fʒix}$  of lime-water, and, after considerable incessant shaking, obtained a very satisfactory emulsion, containing 40 per cent. of codliver oil, which remained unaltered for five days. It then commenced to separate into two layers, the upper one in this case consisting of a small amount of oil, while the lower one, which was at least  $\frac{1}{2}$  of the whole mixture, still appeared to be a perfect emulsion. But very little shaking was required to reunite them.

8. Experiments made with different formulas for "Emulsion of codliver oil and lacto-phosphate of lime," gave me the following results: By following the directions of the formula published by Mr. Shinn ("Amer. Jour. of Pharm.," March, 1873, p. 135) I obtained a nicely flavored emulsion. An attempt to mix the oil, water and gum in his proportions by throwing them together into a mortar and triturating them well, proved equally successful; the emulsion in this case, however, separated after standing for 24 hours, there being a narrow layer of oil visible floating on top of the emulsion. Shaking in this case also reunited them.



Mr. Chiles' formula (*"Amer. Jour. of Pharm.,"* March, 1873, p. 104) also deserves mention, furnishing, if properly adhered to, a very satisfactory result. There is another formula for this preparation, usually used by me, which seems to be preferred by many physicians. It is pleasant, acceptable to the most delicate stomach, and will not separate, if properly made.

The recipe is as follows :

R Ol. Morrhuæ, . . . . .	f℥iv.
Pulv. Sacchari albi, . . . . .	
" Gum. Acaciæ, . . . . .	āā ℥ss.
Ol. Gaultheriæ, . . . . .	gttxxvi.
" Menth. Pip., . . . . .	gttvi.
Aqu. dest., . . . . .	f℥iv.
Misce, fiat emulsio, cui adde.	
Syr. Lactophosphatis Calcii, . . . . .	f℥ii.

Mix the ethereal oils with the codliver oil ; make a thick mucilage with the gum, sugar and a small quantity of distilled water ; gradually and carefully, with constant trituration, add the oil and the balance of the water alternately.

The syrup of lacto-phosphate of lime is kept by me in a separate bottle, and added in the proper proportion before dispensing. I have never found any trouble in keeping it on hand during the warm season, except in one case, when the emulsion separated, which was, however, due to imperfect manipulation and too great haste when preparing it, as was proved by later experiments. This emulsion can be flavored differently, of course, by substituting oil of bitter almonds or any other desirable flavor for the oils of wintergreen and peppermint. The syrup of lacto-phosphate of lime used by me was made according to the formula published by Mr. Chiles (*"Amer. Jour. of Pharm.,"* 1873, p. 105), and seems very satisfactory.

9. A preparation prescribed much lately is "Emulsion of codliver oil with hypophosphites." It can be easily made by substituting the proper syrup in the formula given above.



# QUINIA PILLS.

*Editor American Journal of Pharmacy:*—As an addition to the note of Mr. Brett, in the April number of the "Amer. Jour. of Pharmacy," I send you a precise formula, which has been well known in our country for several years:

R Chinini sulfurici,	. . . . .	30 00 grams.
Gum. arab. pulv.,	. . . . .	5 00
Glycerin,	. . . . .	10 00

To the gum and glycerin, well triturated in a mortar, add gradually the quinia salt. The result is an excellent and unalterable mass.

ADR. NICKLÉS.

Benfeld (Alsace), April 17, 1878.

*Editor of American Journal of Pharmacy:*—In the April number of your valuable journal I have read with pleasure a communication from Mr. James E. Brett, regarding the make-up of quinia pills. And while I think the substances he proposed (powdered acacia and glycerin) will accomplish satisfactory results, still I think if powdered tragacanth be substituted for the acacia, with the use of glycerin, less difficulty will be experienced in making up the pills; they will be of whiter appearance, and retain their properties unaltered for almost an indefinite period of time. In fact, I have found an excipient of this kind:

Powdered tragacanth,	. . . . .	℥ii
"Glycerin,	. . . . .	q. s. to make a thick paste,"

to answer for making up a larger number of substances, in pill form, better than any other I have ever known. Any of the dry iron salts, such as phosphate, ferrocyanide, sulphate and citrate, can, with ease, be made into pills by using this excipient and a little "elbow-grease."

T. A. CHEATHAM, Ph.G.

Macon, Ga., April 12th, 1878.

# ANOTHER PILL EXCIPIENT.

BY J. J. BROWN, Ph.G.

(Read at the Pharmaceutical Meeting, May 21, 1878.)

What is the best pill excipient for general purposes? seems to be almost an unanswerable question. We have found that glycerin lacks sufficient adhesiveness; vegetable extracts are inadmissible on account of their individual medicinal properties; syrups and solutions of acacia

or tragacanth render a pill in time hard and insoluble; honey or molasses are inconvenient, besides attracting swarms of flies to the prescription counter, and crumbs of bread and confections of rose are too bulky.

The Glyceritum amyli of the B. P. is a step nearer perfection, but is wanting in adhesiveness, and decidedly hygroscopic. As the result of quite a number of experiments on this subject, the writer has found the following modified formula of the latter to serve a most excellent purpose:

R Powdered Starch, . . . . .	3ss.
" Sugar, . . . . .	3i.
" Tragacanth, . . . . .	3ii.
Water, . . . . .	3ii.
Glycerin, . . . . .	3iv.

Triturate the powders with the water and glycerin until a homogenous mixture is obtained; transfer to a porcelain capsule and apply heat until all the starch granules are ruptured, stirring constantly of course, to prevent burning.

This forms a jelly-like substance of such consistence as to be readily taken up on the point of a spatula. It undergoes no change on exposure (at least not in our equitable California climate) is possessed of enough *stickiness* to subjugate the most refractory pill mass, and contains sufficient glycerin to prevent the pill from ever becoming hard or insoluble.

Oakland Cal., May, 1878.

### ON ASPIDIUM MARGINALE, Swartz.

BY CHAS. H. CRESSLER, PH.G.

(Read at the Pharmaceutical Meeting, May 21, 1878)

In September, 1874, Dr. J. L. Suesserott, of Chambersburg, requested me to prepare for him an emulsion of oleoresin of male fern, which he administered with the result of the expulsion of but a small portion of tænia. The oleoresin furnished the doctor was bought from a wholesale druggist of good repute; and had the appearance of a pure article, but his failing to get a satisfactory result caused me to think that, if our indigenous fern had any comparative virtues, we could furnish a reliable preparation which would be one advantage; and even if it were not so active as the European plant, that this might be more than

counterbalanced by having the control of its preparation. I at once collected what I had thought to be *Filix mas*, selected the greenish colored remains of the leaf stalks, with an adhering portion of the rhizome, dried them by means of a gentle, artificial heat, and made an oleoresin according to the British formula. Dr. Suesserott administered the same quantity of this oleoresin that he had of the other to the same patient, the result of which was the expulsion of nine feet of *tænia*, including the head. For an expression of the doctor's satisfaction with the result see "Report of Franklin County Society," in the published "Transactions of Pennsylvania State Medical Society," 1875, page 637.<sup>1</sup>

Believing this result sufficient for further trial, I gathered in October of the same year, 1874, more of the fern and made four ounces of oleoresin. I did not dispense this on prescriptions, however, but in August, 1876, a friend of mine stated to me that he was passing sections of tape worm. My anxiety to test still further the virtues of our indigenous fern led me to violate my usual custom of not prescribing. Two drachms of the oleoresin were put into nine gelatin capsules, of which three were taken at 10 P. M., and two at 12 P. M. Unpleasant eructations followed, so that no more of the preparation could be taken. A bottle of citrate of magnesium was taken at 6 A. M. next morning, and after an hour and a half, the subject passed over 24 feet of *tænia*, tapering down apparently close to the head, which, however, was not found. In the latter part of October, about two months after the expulsion of the 24 feet, the same person began to void fully developed sections of *tænia*. Two drachms more of the oleoresin were put into nine gelatin capsules. The subject, after fasting from 12 M., took three of these at 10 P. M., and one more at 12 P. M., and followed them in six hours with emulsion of castor oil, and in two-and-a-half hours he discharged 8 feet of the worm, tapering down apparently to the head, which, however, was not found in this instance either. To this date careful observation has failed to discover any further evidence of the presence of the parasite.

The fern used is an evergreen, and, according to Wood's Botany, seems to be the *Aspidium marginale* described by James Lemon Pat-

<sup>1</sup>In reading the paragraph referred to, in first line read alcohol instead of tinct. phytolacæ.

tersen in vol. 47, page 292, "Amer. Jour. of Pharm.," 1875. It grows along the banks of the Conococheague creek and other streams that wind through the fertile region of the Cumberland valley, but only on the rocky ledges that face northward. I never found it on those facing directly southward, and never on the mountain ranges that border our valley except a few stocks at springs along the foot of the mountain.

An interesting fact in support of this statement was noticed this morning on a visit to the yard of Dr. Suesserott. In a shaded portion of the ground on an elevated bed, having an evergreen honeysuckle as its principal occupant, a circular and marginal belt of these ferns had been planted in October, 1874. At this date they are still flourishing luxuriantly on only about two-fifths of the circle facing northward, while none whatever remain on the three-fifths of the circle facing southward, notwithstanding the fact that the north, east and south sides of this mound are surrounded at about equal distances with buildings of similar height.

Chambersburg, Pa., May 4, 1878.

#### NOTE ON ASPIDIUM MARGINALE.

By J. M. MAISCH.

Mr. Cressler has very kindly accompanied the preceding communication with various specimens comprising the tape worm expelled in August and October, 1876; specimens of the rhizome and stipes as used by him in preparing the oleoresin, and living plants and herbarium specimens of the same. As indicated by Mr. Cressler, the plant is *Aspidium marginale*, Sw., which, according to Gray, is very common on the northern section of this continent is of frequent occurrence in the rocky woodlands of Pennsylvania, and is met with farther south to the mountains of North Carolina (Chapman's Flora of the Southern United States). Our native species of *Aspidium*, as arranged in Gray's Manual, belong to two subgenera, viz.: *Polystichum*, which has the indusium or shield-like covering of the sori (fruit patches) orbicular, entire and attached by the depressed centre, while in the subgenus *Dryopteris*, the indusium is more or less kidney-shaped and notched at one side. The latter comprises the larger number (8) of species, which include both *Aspid. marginale* and *Asp. Filix-mas*. The true male fern occurs in rocky woods of the Keweenaw peninsula of Lake Superior and westward, and according to Porter and Coulter's Flora of Colorado,

also in the Grand Canon of the Arkansas, and along the foot-hills west of Denver. It agrees with *Asp. marginale* in having the stipes or leaf stalks covered at the base with a copious chaff of brown glossy scales, the fronds or leaves twice pinnate with the upper pinnules confluent, and the lower ones more or less pinnatifid-toothed and with some of the veins repeatedly forked. But the two species differ in the frond of *Asp. marginale* being evergreen and having the fruit dots close to the margin, while in *Asp. Filix-mas* the fruit dots are near the mid-vein, and the fronds do not survive the winter. The rhizome of the latter attains a thickness of one inch, and shows upon the cross section, about 10 larger, besides several smaller, and in the stipes about 8 irregular wood bundles, the former being arranged in a loose circle. The rhizome of *Asp. marginale* is thinner, about  $\frac{3}{8}$  inch in diameter, and contains a loose circle of about six larger and smaller, and the stipes six very small wood bundles; otherwise in appearance and sensible properties the subterraneous portions of the two plants resemble each other very closely.

Since the constituents of the latter species have been proved by Mr. Patterson to be identical with those of the male fern, and since the efficiency of the American species has been shown through Mr. Cressler to be equal to that of *Asp. Filix-mas*, it is to be hoped that the next Pharmacopœia will place the two species on an equality, and authorize the indiscriminate use of the one which may be most convenient to collect. In the meantime, it is suggested that, if occasion offers, pharmacists will submit preparations of *Asp. marginale* for the use of physicians, and that the results obtained be duly recorded. In preparing the oleoresin, it must not be overlooked that only the green portion of the subterraneous parts be used, and that all the brown and decayed portions be rigidly excluded.

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### ACETIC ACID, PURE.

BY EDWARD GAILLARD, PH.G.

(Read at the Pharmaceutical Meeting, May 21, 1878.)

This acid, which, owing to alphabetical precedence, stands first on the many chemical lists of the day, also heads the list in point of antiquity, of the hundreds of manufactured acids now known. Under the name of vinegar, dilute acetic acid was known ages before



the discovery of any acid except those which exist ready formed in the vegetable kingdom. Having an organic origin, that is, being a resultant from changes produced in organic substances, by heat or otherwise, it is naturally rather troublesome to deprive it of some of the other simultaneously-produced compounds, such as empyreumatic oils, etc., without effecting a partial decomposition of the acid itself.

One method is to combine it with a base, such as soda or lime, and to maintain the resulting salt at a temperature sufficiently elevated partially to carbonize the empyreumatic substance. Even by this method, however, the desired result is not realized with economy, for if heated until complete carbonization of foreign matter is effected, the acetate also is partially sacrificed, and proves a loss.

In some parts of France and Germany the carbonate of baryta is used, instead of the corresponding soda salt, to produce the acetate, as acetate of baryta is more stable under the influence of high temperatures than acetate of soda.

Some of the acetic acid manufactured in this country is derived from the distillation of acetate of lime with a stronger acid, or is produced from pyroligneous acid of home manufacture. The former is generally of a better quality, and has a more acceptable odor.

As a perfect carbonization of empyreumatic oils cannot be effected without endangering, to some extent, the acetate, an acid perfectly free from them is rarely met with.

I have examined various samples of this acid and have found that all of them, after being neutralized and then mixed with a dilute solution of permanganate of potassa, would discolor this reagent from the presence of these oils. A very delicate test is the odor of the acid, which, if fragrant and pungent, without a smoky or empyreumatic smell, generally indicates that the acid is free from any large quantity of these substances.

However, when used in delicate operations, as in photography, it should be tested by adding to it an equal bulk of pure sulphuric acid, and if this does not color within a few hours the acetic acid may be considered pure.

The Dispensatory and the U. S. Pharmacopœia give, as a test for the presence of nitric acid, to digest the acid with silver, and then add chloro-hydric acid, when, if any be present, a precipitate of chloride of silver will be formed. I have, on several occasions,



digested acetic acid, to which one or two per cent. of nitric acid had been added, for half an hour on a warm sand-bath, without allowing the acid to boil, and, after the addition of chloro-hydric acid, failed to perceive any precipitation of the silver salt. I generally test it by first neutralizing the acid with carbonate of soda, and, after the addition of an equal volume of sulphuric acid, pure, free from nitric acid or selenium, allow the mixture to cool, and add a concentrated aqueous solution of sulphate of the protoxide of iron, without allowing its admixture. If the least trace of nitric acid is present a dark ring will be formed where the fluids are in contact.

The remaining impurities most common in acetic acids, and the means of detecting them, are alluded to in the table following :

ADULTERATIONS.	TESTS.	PURE.	IMPURE.
1 Water.....	1 Hydrometer.....	1 Sp. gr. 1.047....	1 Lighter.
2 Empyreumatic oils.	2 Odor.....	2 Agreeable smell	2 Empyreumatic odor.
3 Nitric acid.....	2 Boiled with an equal volume of sulphuric acid.	2 The acid is not colored.	2 The acid is colored.
4 Muriatic acid.....	3 Neutralized with carb. of potassa, with the addition of pure sulph. acid, and then concentrated solution sulphate iron.	3 No dark ring at point of contact of the iron solution.	3 A dark ring.
5 Sulphuric acid.....	4 Addition of nitrate of silver..	4 No precipitate.	4 Precipitate.
6 Sulphurous.....	5 Chloride of barium.....	5 No precipitate.	5 Precipitate.
7 Lead.....	6 Sulphuretted hydrogen.....	6 No precipitate.	6 Milkiness.
8 Copper.....	7 Sulphide of ammonium.....	7 No precipitate.	7 Black precipitate.
9 Lime.....	8 Sulphide of ammonium.....	8 No precipitate.	8 Black precipitate.
10 Formic acid.....	9 Oxalate of ammonia.....	9 No precipitate.	9 White precipitate.
	10 Boiled with an equal volume of solution nitrate silver or proto-nitrate mercury.	10 No precipitate.	10 Separates the nitrates by reducing them to the metallic state.

## GLEANINGS FROM THE GERMAN JOURNALS.

BY L. VON COTZHAUSEN, PH.G.

**Elastic Gelatin Capsules.**—Detenhoff recommended to prepare them from 1 part of gelatin, 2 of water and 2 of glycerin, which, however, does not give a satisfactory mass, the capsules becoming opaque as the water gradually evaporates. The following formula is preferable, capsules made by it remaining transparent and elastic for years. Take 1 part of gelatin, 2 parts of water and 4 parts of glycerin; soak the gelatin in the water, and dissolve with a gentle heat; add the glycerin, and evaporate on a water-bath until 5 parts remain, that is until all the water is evaporated; into this warm melted mass dip the moulds, and proceed as usual.—*Pharm. Ztg. f. Russl.*, March 15, p. 164.

**Pyrogallic acid stains** are removed from linen by a solution of oxalic acid in 50 or 60 per cent. alcohol, and then exposing to the direct sunlight.—*Pharm. Centralh.*, April 11, p. 135.

**Presence of Large Amount of Lime in Magnesia Usta.**—Calcined magnesia nearly always contains a trace of lime, the subcarbonate of magnesia being rarely free from it. Marquardt states that a larger proportion of lime, when present, is easily recognized by its characteristic caustic taste.—*Pharm. Centralh.*, April 11, p. 137.

**Condensed Milk.**—A writer in a Cologne paper makes the following comparison:

Cond. milk of Cham contains for	100	albuminates	63	fat and	375	sugar.
“ “ Kempfen “	100	“	66	“	221	“
Woman's milk	100	“	62	“	147	“

The amount of sugar in condensed milk is thus shown to be double and even nearly three times as large as in woman's milk. For this reason Prof. Kehler, Dr. Daly and other physicians consider the former as not only not beneficial, but even injurious to infants, the sugar being transformed into lactic acid in the intestines, causing summer-complaint and other diseases. In their experience, fat and apparently healthy children may be raised on condensed milk who, however, will never equal in strength and resistance to disease those who were raised on woman's- or fresh cow-milk.—*Pharm. Post*, Feb. 16, p. 60.

**Ethylic Alcohol in Coal-Tar.**—At the fiftieth meeting of German naturalists and physicians, held at Munich, O. Witl stated that a series of experiments with 150,000 kilos of common benzol had convinced him of the uniform presence in it of ethylic alcohol, the average amount being .2 per cent.—*Ztschr. æst. Apoth. Ver.*, April 10, p. 166.

**Determination of Santonin in Levant Wormseed.**—Dragendorff recommends to digest for 2 hours 15 or 20 grms. of the wormseed with 15 or 20 cc. of a 10 per cent. soda-lye and 200 cc. of water. The liquid is filtered, the residue washed with distilled water, the filtrates united and concentrated in a water-bath to about 30 or 40 cc. After cooling, the liquid is neutralized with hydrochloric acid, immediately filtered and the filter washed with 15 or 20 cc. of water. The precipitate may be washed with an 8 per cent. soda solution. If santonin crystals are formed on the filter these are collected, and afterwards united with the remainder of the santonin. The filtrate, after the

addition of more hydrochloric acid, is shaken three times with 15 or 20 cc. of chloroform; the chloroform extractions are washed with water and distilled to dryness; the residue is dissolved in very little soda-lye, filtered if necessary, and the filter washed with a little water. The solution is then strongly acidulated with hydrochloric acid and set aside in a cool place. Two or three days later the santonin may be collected on a filter, washed with 10 or 15 cc. of 8 per cent. soda solution, and after drying at 110°C., weighed. For every 10 cc. of aqueous liquid, from which the santonin was precipitated (not counting the wash water), there may be added to the weight of the santonin .002 gm., and for every 10 cc. of soda solution used for washing .003 gm. —*Archiv d. Pharm.*, April, p. 306.

**Salicylate of Sodium.**—A. Bernick prepares a solution containing one-third of its weight of this salt by mixing 84 parts of bicarbonate of sodium with 200 p. of distilled water, and neutralizing without heat by 138 p. of purified salicylic acid. The resulting solution is nearly colorless, and remains unchanged if kept in black bottles.—*Pharm. Ztg.*, April 10.

**Antidote to Carbolic Acid.**—On the recommendation by Prof. Baumann, Dr. Sanftleben used sulphuric acid in several cases of poisoning by carbolic acid with the best success, the phenol combining with the acid to phenyl-sulphuric acid, which is not poisonous. He administered it in a mixture composed of dilute sulphuric acid 10.0, mucilage of gum 200.0, and simple syrup 30.0 grams, in doses of a tablespoonful every hour.—*Pharm. Ztg. f. Russl.*, Feb. 15, p. 119, from *Milit. Ztschr.*

**The Dose of Caffeina.**—According to Nothnagel's "Arzneimittellehre," citrate and lactate of caffeina are usually given in Germany in doses of .05 to .1 gram, but French physicians commence with doses of .5 and increase the dose to 2.0 and even 4.0. Dr. Kelp repeatedly gave doses of .12 gram four times daily without apparent injurious effects, and Dr. Wolff states the dose in migrana to be .2 to .4 gram several times a day.—*Pharm. Ztg.*, April 6.

**Test for Impurities in Tannate of Quinia.**—After numerous experiments, Julius Jobst recommends to proceed as follows: 1 gram of quinia tannate is powdered, well mixed with freshly-slaked lime and the mixture dried in a water-bath. The resulting powder is

extracted with chloroform, and this solution evaporated in a tared beaker. The residue, dried at  $120^{\circ}$ , represents the total amount of alkaloids present in the tannate. The residue in the beaker is dissolved in a little water, acidulated with a few drops of diluted sulphuric acid, filtered if necessary, mixed with 3 or 4 cc. of ether and shaken with an excess of ammonia. If quinia alone is present the liquid will separate into two clear layers, while in the presence of other alkaloids a precipitate will appear, either at once or after a while; such a precipitate may then be further examined in the usual manner. An analysis of a so-called tasteless tannate of quinia gave 4.46 per cent. of quinia, 7.33 per cent. of cinchonidia and 11.97 per cent. of conchinin (quinidia).—*Archiv der Pharm.*, April, p. 331.

**Test for Codëia.**—Some years ago O. Hesse confirmed the observation of Riegel and others, that codëia dissolves colorless in concentrated sulphuric acid at  $20^{\circ}$ , and observed that in the presence of impurities colored solutions are obtained; if the impurity consists of oxide of iron the solution will be blue. This has led to the adoption for certain opium bases of a test liquid, consisting of pure sulphuric acid, to which a very small quantity of ferric chloride is added. To succeed with the test, Hesse states that the codëia should be finely powdered and well dried; 2 or 3 milligr. of this are mixed in a clean test-tube with 1 to 1.5 cc. of pure  $H_2SO_4$ , when a colorless solution will be at once produced. The acid containing iron is used in a like manner.—*Arch. d. Phar.*, April, p. 330.

**Glycerin in Contact with Bicarbonate of Sodium and Borax.**—On adding water to a mixture of equal parts of bicarbonate of sodium and borax no reaction takes place; on the addition of glycerin carbonic acid is generated. After warming until the effervescence ceases, the solution contains borax and monocarbonate of sodium. Experiments have proven that exactly one-half of the carbonic acid existing in the bicarbonate is liberated.—*Pharm. Centralb.*, April 4.

**Ferrum Albuminatum Siccum.**—E. Merck states that dry albuminate of iron, which only requires solution in water to make Triese's (or, according to Merck, Friese's) solution (see "*Am. Jour. Phar.*," March, p. 126), has been manufactured at his laboratory for several years past, and consists of small brownish-red luminous crystals, is not hygroscopic, slowly dissolves in 50 parts of cold water, and more

readily in the same solvent at  $30^{\circ}$  to  $35^{\circ}\text{C}$ . Its solution is translucent and opalescent, neutral to test paper, but will precipitate oxide of iron in flakes after standing for some time. On gradually adding 10 to 12 drops of pure muriatic acid, spec. grav. 1.12, the solution becomes clear; in case a slight turbidness remains, it can be removed by filtration. After mentioning that Schlickum was unsuccessful in all his experiments with dry albuminate of iron, there being always an insoluble residue amounting to 20 per cent. on redissolving the coagulum of chloride of iron and albumen obtained by evaporating to dryness; Dr. Hoffmann suggests to mix the chloride of iron and albumen in a certain proportion, each previously reduced to a fine powder; thus the insoluble residue will be avoided. He operates as follows: 15 parts of crystallized chloride of iron ( $\text{Fe}_2\text{Cl}_6 + 12\text{H}_2\text{O}$ , containing 20 per cent. of metallic iron), or 20 parts of liquor ferri sesquichlorati are dried with 10 parts of dextrin at  $40^{\circ}$  to  $50^{\circ}\text{C}$ ., and pulverized; then 80 parts of pulverized albumen are mixed with it. The latter is obtained by mixing fresh albumen with half its weight of water, setting aside for several hours, then removing the membrane by straining, and finally evaporating on flat plates at a temperature of  $30^{\circ}$  to  $40^{\circ}\text{C}$ ., which is easily accomplished, albumen being not in the least hygroscopic; when dry it is easily removed from the plates. The author considers this dry albuminate of iron by far preferable for making Triese's solution, claiming that in this manner the solution will always have a uniform taste, composition and strength.—*Phar. Zeitung*, March 23 and 30.

## THE CINCHONA ALKALOIDS.

BY O. HESSE.

Translated and condensed from "Berichte der Deutschen Chemischen Gesellschaft," 1877, p. 2152—2162, by L. v. Cötzhause, Ph.G.

*Quinia*,  $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2$ . Precipitated by ammonia or soda, it is amorphous and anhydrous, but soon combines with  $3\text{H}_2\text{O}$ , forming small crystals. Both the anhydrid and trihydrate are readily soluble in ether, which on slow evaporation yields some fine white needles; the balance, at first amorphous, becomes crystalline after some time: The ethereal solution sometimes gelatinizes suddenly from the separation of quinia, which is then less freely soluble in ether, requiring at  $15^{\circ}\text{C}$ . for 1 part of quinia (anhydrous) 16 to 25.5 parts of ether to effect solution. The anhydrid fuses at  $177^{\circ}\text{C}$ ., the trihydrate at  $57^{\circ}\text{C}$ .; the former dissolves



in hot water without fusing, and on cooling separates in needles; the latter fuses in boiling water, and on cooling does not crystallize. A solution of quinia in an excess of diluted  $\text{H}_2\text{SO}_4$  has a blue fluorescence, while with a solution in diluted  $\text{HCl}$  this is not the case. The fluorescence disappears also upon the addition of other substances, notably of chlorides. Quinia solution turns polarized light to the left. Chlorine and ammonia in excess cause a green coloration (thalleiochin). The neutral sulphate  $2\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2 \cdot \text{SO}_4\text{H}_2 + 8\text{H}_2\text{O}$  is very efflorescent; the medicinal salt should contain 15.3 per cent. water of crystallization  $= 7\frac{1}{2} \text{H}_2\text{O}$ .

*Quinidia* (conchinin), isomeric with quinia, but rotating to the right, was discovered by van Heijningen; it crystallizes from alcohol with  $2\frac{1}{2} \text{H}_2\text{O}$  in efflorescing prisms; from ether in rhombohedrons with  $2\text{H}_2\text{O}$ ; from boiling water in delicate plates with  $1\frac{1}{2} \text{H}_2\text{O}$ ; in the two latter forms it does not effloresce at the ordinary temperature. The salt mostly met with in commerce has the formula  $2\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2 \cdot \text{SO}_4\text{H}_2 + 2\text{H}_2\text{O}$ .

*Quinicia*,  $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}_2$ . By heating the sulphate or other salt of quinia or conchinia until melted it is transformed into sulphate of quinicia without losing in weight. Quinicia is amorphous, rotates the plane of polarization to the right, and is never present in cinchona bark.

*Diconchinia*,  $\text{C}_{40}\text{H}_{46}\text{N}_4\text{O}_3$ , the principal constituent of chinoidin, is amorphous, fluoresces in a sulphuric acid solution, like quinia and quinidia; gives a green coloration with chlorine and ammonia in excess, and rotates the plane of polarization to the right. It does not yield quinicia, and has not yet been converted into quinidia.

*Cinchonidia*,<sup>1</sup>  $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}$ , first observed by Henry and Delondre (1833), again discovered by Winckler (1844) as quinidia, and subsequently called  $\alpha$  quinidia by Kerner, crystallizes from alcohol in shining prisms, rarely in delicate white needles or plates, the crystals being anhydrous. Its solutions rotate the plane of polarization to the left, are not fluorescent and not colored green by chlorine and ammonia. The sulphate has the formula  $2\text{C}_{20}\text{H}_{24}\text{N}_2\text{O} \cdot \text{SO}_4\text{H}_2 + 6\text{H}_2\text{O}$ , and is nearly insoluble in chloroform, but swells with it to a jelly-like mass.

*Cinchonia*,  $\text{C}_{20}\text{H}_{24}\text{N}_2\text{O}$  (isomeric with cinchonidia), crystallizes from hot stronger alcohol in shining anhydrous prisms. Its solutions are

<sup>1</sup> The author states that Pasteur's quinidia consisted of nearly 2 parts of Winckler's quinidia and 1 part of Koch's cinchonidia.



dextrogyre, and show no fluorescence. The sulphate  $2C_{20}H_{24}N_2O \cdot SO_4H_2 + 2H_2O$  crystallizes from water in compact prisms.

*Cinchonidia*,  $C_{20}H_{24}N_2O$ , anhydrous monobasic sulphate of cinchonidia or cinchonina, heated to  $130^\circ C.$ , or until they melt, are transformed into sulphate of cinchonidia. The alkaloid rotates the plane of polarized light to the right, is amorphous and never present in cinchona barks. Some salts are crystallizable.

*Dicinchonia*,  $C_{40}H_{48}N_4O_2$ , may be expected in the chinoidin of such barks which contain a large percentage of cinchonidia or cinchonina. As yet it has not been obtained entirely free from diconchinia.

*Homocinchonidia*,  $C_{19}H_{22}N_2O$  (Koch's cinchonidia, 1877), crystallizes from strong alcohol in large prisms and from diluted alcohol in scales, and deviates the plane of polarized light to the left. The sulphate,  $= 2C_{19}H_{22}N_2O \cdot SO_4H_2 + 6H_2O$ , crystallizes in very delicate needles, which have a gelatinous aspect, and while still moist melt at about  $30^\circ C.$ ; when carefully dried it resembles magnesia in appearance, is usually anhydrous, and in this condition swells with chloroform to a jelly-like mass. The *cinchovatina* (*aricina*) of Winckler, from *Cinch. ovata*, is mainly this alkaloid.

*Homocinchonia*,  $C_{19}H_{22}N_2O$ , is probably identical with Skraup's (1877) *cinchonina*, and appears to be present in the bark of *Cinch. rosulenta*.

*Homocinchonidia*,  $C_{19}H_{22}N_2O$ , an amorphous alkaloid, is formed when the anhydrous monobasic sulphate of homocinchonidia is melted. Its oxalate,  $= 2C_{19}H_{22}N_2O \cdot C_2H_2O_4 + 4H_2O$ , greatly resembles the corresponding salt of cinchonidia.

*Dibomocinchonia*,  $C_{38}H_{44}N_4O_2$ , is amorphous, rotates the plane of polarization strongly to the right, yields amorphous salts and is also present in the bark of *Cinch. rosulenta*.

*Quinamina* (*chinamin*),  $C_{19}H_{24}N_2O_2$ , discovered by the author (1872) in the bark of *C. succirubra* grown at Darjeeling, and subsequently in all barks of the same species from British India and Java, in Mutis' Quinquina rouge, and in the barks of *C. nitida*, *C. erythrantha*, *C. erythroderma*, *C. rosulenta*, *C. calisaya* var. *Schuhkrafft* and *C. calisaya*, known in English commerce as Para-bark. It is separated from the amorphous alkaloids by precipitating the dilute acetic acid solution with potassium sulphocyanide until the liquid is pale yellow; when clear it is supersaturated with ammonia, agitated with ether, the ethereal

solution evaporated and the residue crystallized from hot dilute alcohol; the mother-liquor retains the balance of the amorphous bases. The author now regards his first formula,  $C_{20}H_{26}N_2O_2$ , as incorrect.

*Conquinamina*,  $C_{19}H_{24}N_2O_2$ , is present with the preceding in *C. suc-cirubra* and *C. rosulenta*, and perhaps in all barks mentioned above. It crystallizes in long shining prisms, which melt at  $123^{\circ}C$ , while quinamina melts at  $172^{\circ}C$ . It is more powerfully dextrogyre than quinamina, and, like it, is precipitated by chloride of platinum only from concentrated solutions, and yields with chloride of gold a yellow precipitate, changing to purple, and with hydriodic acid a salt crystallizing in handsome prisms.

*Quinamidia*,  $C_{19}H_{24}N_2O_2$ , an amorphous alkaloid, is formed when quinamina is boiled for some time with diluted  $H_2SO_4$ ; it is precipitated from an acid solution with difficulty by ammonia, more easily by soda, and is easily soluble in ether. With  $HCl$  it forms prismatic crystals, sparingly soluble in water, and with chloride of gold a yellow amorphous precipitate, soon turning purple.

*Apoquinamina*,  $C_{19}H_{22}N_2O$ , is isomeric with homocinchonidia, and is formed by the action of concentrated  $HCl$  on quinamina and conquinamina  $C_{19}H_{24}N_2O_2 - H_2O = C_{19}H_{22}N_2O$ . It is a white amorphous powder, very soluble in ether, alcohol and in diluted  $HCl$ . The chlorhydrate is amorphous; chloride of platinum causes a yellow amorphous precipitate  $(C_{19}H_{22}N_2OHCl)_2 + PtCl_4$ ; chloride of gold gives a similar precipitate, which does not turn purple.

*Quinamicina*,  $C_{19}H_{24}N_2O_2$ , is formed when quinamina and probably also conquinamina, in the form of sulphate, is heated to  $100^{\circ}C$ . The residue is dissolved in cold water, precipitated by sodium bicarbonate, and the alkaloid freed from quinamidina by repeated solution in acetic acid and precipitation with bicarbonate. Quinamicina is a white amorphous powder, which fuses between  $95$  and  $102^{\circ}C$ ., is slightly dextrogyre and freely soluble in ether and in diluted  $H^2SO^4$ ; the latter solution yields yellow precipitates with the chlorides of platinum and of gold.

*Protoquinamicina*,  $C_{17}H_{20}N_2O$ , is formed, like the preceding, by raising the temperature to above  $100^{\circ}C$ ., preferably to between  $120$  and  $130^{\circ}C$ . The sulphate is nearly insoluble in cold water. The alkaloid is insoluble in ether, but dissolves readily in acetic acid, forming a brown solution, from which it is precipitated by ammonia or

sodium bicarbonate, in light brown amorphous flakes, becoming black-brown on drying.

*Paricina*,  $C_{16}H_{18}N_2O$ , found with quinamina in red bark from Darjeeling; it is at once precipitated by bicarbonate of sodium from dilute solutions, and forms a pale yellow amorphous powder, soluble, with a yellow color, in ether, when fresh, and yielding amorphous salts; chloride of gold causes a muddy yellow coloration, which will not turn purple.

*Paytina*,<sup>1</sup>  $C_{21}H_{24}N_2O + H_2O$ , contained in the white cinchona bark of Payta; it crystallizes in beautiful prisms, and has the same reaction with chloride of gold as quinamina, conquinamina and quinamidina; it differs from them, however, in being easily precipitated by chloride of platinum. Paytina rotates the plane of polarized light to the left.

*Paytamina* is the amorphous alkaloid present with paytina in the above bark; it is easily soluble in ether, is colored purple by chloride of gold, and precipitated by chloride of platinum.

*Cusconina*,  $C_{23}H_{26}N_2O_4 + 2H_2O$ , crystallizes in small plates, was discovered by Leverkus in Cusco cinchona, and differs from all other cinchona alkaloids by forming an amorphous, jelly like sulphate with  $H_2SO_4$ , which is not dissolved by adding more acid. Its acetate and other salts are likewise gelatinous.

*Aricina*,  $C_{23}H_{26}N_2O_4$ , is found in the same bark as cusconina; it was discovered by Pelletier and Coriol, crystallizes in white, shining prisms, which melt at  $188^\circ C.$ , rotates the plane of polarization to the left, like cusconina, and forms salts, which are sometimes gelatinous, but are more characterized, particularly the binoxalate and acetate, by their sparing solubility.

*Cusconidina*, also a constituent of the Cusco-bark, is precipitated by ammonia from solutions in acids in pale yellow amorphous flakes, which after being washed form a loosely coherent mass, become denser on drying in the air, and ultimately melt together. Its composition has not yet been determined.

*Javanina* was separated by the author from the so called amorphous bases of Java calisaya bark. It separates from water slowly in rhombic scales, is very easily soluble in ether, without crystallizing on evapora-

<sup>1</sup> In the formula published in "Berichte,"  $H_{20}$  was erroneously given; the alkaloid was discovered by Hesse in 1870.—EDITOR.

tion, dissolves in dilute sulphuric acid with an intense yellow color, and yields with oxalic acid a neutral salt crystallizing in scales.

*Another alkaloid* was observed in young calisaya bark from Bolivia; it is liquid, produces a greasy stain upon paper, and has a penetrating odor reminding of quinolina.

Other derivatives are the *hydrocinchonins* and the bases obtained by Zorn by acting with highly concentrated muriatic acid upon the four more common cinchona alkaloids.

### SULPHATE OF QUINIDIA.

BY DR. J. E. DE VRIJ.

In reading the transactions of the Paris Société de Pharmacie (see "Amer. Jour. Phar.," April, p. 204,) in the meeting on the 9th of January, my attention was struck by the conclusion of M. Petit "that the neutral sulphate of quinidia does not contain water of crystallization." This conclusion, combined with the wish of a Dutch chemist, expressed in one of our journals, to become acquainted with a cheap reagent to test the purity of the commercial sulphate of quinidia, induces me to communicate some particulars about this compound.

Professor A. C. Oudemans determined the molecular rotation of this salt dissolved in absolute alcohol.

A salt prepared by himself,  $2(C_{20}H_{21}N_2O_2)SO_4H_2 + 2H_2O$ , in which he found experimentally 4.5 per cent. of water yielded a molecular rotation of  $255^\circ 2' \text{ } \delta$ .

A salt beautifully crystallized in very long needles, presented to me by Messrs. Howard & Sons, in which he found 4.5 per cent. of water, yielded a molecular rotation of  $255^\circ 4' \text{ } \delta$ .

A salt presented to me by M. Tallendier, of Argenteuil, in which he found 4.6 per cent. of water, yielded a molecular rotation of  $254^\circ 9'$ .

From these experiments it follows that the crystallized sulphate is scientifically not anhydrous, but contains two molecules of water of crystallization = 4.603 per cent. From a commercial point of view, however, I found that M. Petit is right, for 7.003 grams of commercial sulphate of quinidia, presented to me a few years ago by Messrs. Howard & Sons, lost only 0.025 grams = 0.35 per cent. by a long exposure to the heat of a water-bath. It seems, therefore, that the pure crystallized sulphate loses its water of crystallization very easily.

The test for the purity of this salt is based upon the fact, which I

found more than twenty years ago, that the hydriodate of quinidia requires more than twelve hundred parts of cold water to dissolve it.

One gram of sulphate of quinidia, prepared by myself, in 1856, chemically pure, from a specimen of quinidia kindly presented to me by Mr. J. Eliot Howard, was dissolved in 50 grams of hot water, and to this solution added 0.5 gram of potassium iodide. By this addition a heavy sandy crystalline powder of hydriodate of quinidia was precipitated, and on filtering off the liquid on the next day, the clear liquid was not altered by the addition of a few drops of liquor ammoniæ, but remained *perfectly clear*.

Having ascertained by this experiment the behavior of the chemically pure sulphate of quinidia under the circumstances mentioned, I applied this test to the good commercial sulphate, presented to me a few years ago by Messrs. Howard. I found that the liquor filtered from the precipitated hydriodate of quinidia became *slightly* turbid by the addition of liquor ammoniæ, but without separating an appreciable precipitate.

Therefore, the practical test for the purity of the commercial article is to dissolve one part of the salt in fifty parts of hot water, and to add to this solution a half part of iodide of potassium. If the precipitate is not sandy, but resinous, no further trouble need to be taken, for this resinous aspect proves that the salt contains either cinchonia or cinchonidia, or perhaps both of them. If, however, the precipitate constitutes a heavy sandy crystalline powder, the filtered liquid is, after some hours, tested by liquor ammoniæ. If this addition makes the liquor only slightly turbid *without formation of an appreciable precipitate*, the conclusion is that the salt is really good sulphate of quinidia, and contains only traces of other cinchona alkaloids, which generally is a slight trace of cinchonia.—*Phar. Jour. and Trans.*, March 23, 1878.

*The Hague.*

**NOTE on a CRYSTALLIZABLE INDIFFERENT RESIN  
of GURJUN BALSAM, an ADDITION to the "PHAR-  
MACOGRAPHIA."**<sup>1</sup>

BY PROFESSOR FLÜCKIGER.

In the "Pharmacographia," p. 204, it is stated that copaivic acid is by no means an abundant and common constituent of copaiba. The only kind of that balsam I have ever met with, which readily yields

<sup>1</sup>Translated from the *Archiv der Pharmacie*, February, 1878.



crystallized acid is that mentioned in the said book. The drug alluded to was contributed from Trinidad to the London Exhibition of 1851. The crystals before me are of decidedly acid reaction on litmus paper. I have recently again examined several varieties of copaiba, but have not been successful in obtaining copaivic acid from them. At the same time I prepared the essential oils from them and was astonished to find them all levogyre, although I had submitted to distillation not only levogyre varieties of the balsam, but also strongly dextrogyre ones. I must say in fact (see "*Pharmacographia*," p. 204), that I have as yet not met with an *oil* of copaiba deviating to the right.

Some time ago I noticed in the price list of Gehe's and Co., Dresden, "crystallized copaivic acid." On applying for it, and at the same time for the very balsam from which it had been extracted, I was at once informed that the material by which the acid had been afforded was "East Indian copaiba." The balsam sent, together with the crystals, proved indeed to be *Balsamum Dipterocarpi*, as described by Hanbury and myself in "*Pharmacographia*," p. 81. I therefore supposed the crystals sent by Gehe and Co. to agree with gurjunic acid, but found them to be devoid of acid character. They were slightly yellowish and undoubtedly crystalline, and soluble, although not precisely in abundance, in the usual solvents for resins. Among them I found petroleum spirit, boiling at about 80°C., the most suitable for purifying the crystals. If they are dissolved in about twelve parts of that liquid, tolerably well-formed crystals, thin prisms—sometimes as long as two-fifths of an inch—are obtained by exposing the solution to cold. I have not been able to get finer crystals, either by evaporation of the petroleum spirit solution or by using alcohol.

The purest, perfectly transparent and colorless crystals of the best crops begin to melt at 126°C. without diminishing their weight; they are in fact anhydrous; somewhat more considerable quantities cannot be perfectly liquefied before reaching 130°. Gurjunic acid,<sup>1</sup> according to Werner (*Zeitschrift für Chemie*, 1862, 588), melts at 220°. The resin under notice, as purified by me, after it has been melted, forms an amorphous mass, reassuming immediately the crystalline form as soon as it is slightly touched with alcohol. By heating the crystallized

<sup>1</sup>It is called "gurgunic acid" in the German books, owing no doubt, to a misprint, for I am not aware that in India they ever write "gurgun balsam" but always "gurjun," although I am unable to say what this word signifies.

resin in a platinum capsule it is partly volatilized, and evolves the same odor as is given off by heated colophony—partly it is charred, the small amount of charcoal being easily burnt away.

The crystallized resin is not dissolved even by boiling caustic lye, nor does it possess an acid reaction on litmus paper; it is in no way capable of yielding any compound with basic substances. Its saturated solution in petroleum spirit displays no rotatory power on polarized light.

It forms an orange solution with concentrated sulphuric acid, becoming decolorized and turbid on addition of water. If submitted to destructive distillation an acid oily liquid of a rather agreeable odor is produced. By using potash the resin under notice is not much altered, nor by heating it with anhydride of acetic acid.

Submitted to ultimate analysis by Dr. Buri, in my laboratory, the resin in burning yielded

	I.	II.	III.
CO <sub>2</sub> . . . . .	0'2476	0'2354	0'2492
OH <sub>2</sub> . . . . .	0'7369	0'6996	0'7419
	0'2535	0'2410	0'2557

Answering in percentages—

C . . . . .	81'16	81'05	81'16
H . . . . .	11'38	11'37	11'40
O . . . . .	7'46	7'58	7'40

The formula C<sub>28</sub>H<sub>46</sub>O<sub>2</sub> would require

28 C . . . . .	336	81'16
46 H . . . . .	46	11'11
2 O . . . . .	32	7'73
		100'00

The crystallographic character of the resin has been examined and carefully described by Dr. Bücking, in Professor Groth's "Zeitschrift für Krystallographie," Leipzig, 1877, 389. The crystals belong to the asymmetric system and are long prisms.—*Phar. Jour. and Trans.*, March 16

## HOSPITAL STEWARDS, U. S. A.

*Editor American Journal of Pharmacy:*—On behalf of the Hospital Stewards, U. S. A., allow me to tender our sincere acknowledgments for the service you have rendered in advocating our cause in your valuable journal. As the subject of our rank, duty and pay seems to be little understood outside of army circles, permit me to make a few remarks with the view of rendering it more intelligible.

First, our *rank*: This is but nominal; virtually speaking we hold no rank what-

ever, and outside of the hospital proper we are subject to the orders of the junior corporal of the regiment or post. It may be said that we certainly do hold a definite rank according to "regulations." This would be the natural inference to be drawn from the wording of the law creating our grade, but this law, or regulation, is ignored in every instance, as can be clearly shown.

Our warrants are issued and signed by the Secretary of War, and should, therefore, have precedence of those issued by company and regimental commanders to the various non-commissioned officers of their commands.

That such, however, is not the case, I will cite the law which fixes the rank :

"Rank of non-commissioned officers :

1st, Cadets,	4th, Ordnance Sergeants,
2d, Sergeants Major,	Commissary Sergeants and
3d, Quartermaster's Sergeants,	Hospital Stewards."

Now, although holding the same rank as Ordnance and Commissary Sergeants, we receive less pay than either.

Not only is our rank ignored in so far as relates to the source of our warrants and in the matter of pay, but also as regards the custom of the service, for example : if the troops of a post or camp are removed and a corporal, or for that matter a private, is left in charge of the government property, the said corporal or private, according to the custom, commands the Hospital Steward.

Now as to our *duties* : That they are multifarious, disagreeable and full of responsibility will be sufficiently clear to any one who will take the trouble to read our "Vade Mecum," the "Hospital Steward's Manual," which has been published and adopted by the War Department, as a guide for the Hospital Stewards of the army. At the same time, this manual is utterly silent on the subject of Stewards performing the responsible duties of the Post Surgeon, which we are called upon to do more or less every day.

For the last two weeks the writer has been attending to all the sick in garrison at this place, and performing all the duties of the Post Surgeon, on account of sickness of the Surgeon in charge. In my diary I find recorded six cases of midwifery attended to during my last four years of service, five of these were thrown on my hands by reason of sickness or absence of the Post Surgeon at the time of their occurrence, and the other because the woman had refused to do the Surgeon's washing and was afraid that he would, on that account, refuse to attend her.

Again, there are a large number of surgeons who, when called upon by the enlisted men and laundresses of the garrison, instead of attending in person, send their steward with instructions to do what he can for them, and if necessary take them into the hospital, where the surgeon will visit them next day.

In this and various other ways a great amount of the Post Surgeon's duty is thrown upon the shoulders of the steward, and for all which he receives the munificent salary of \$30 per month.

This brings me to the subject of our *pay*. When our grade was first established our sole duty consisted of drawing the rations for the sick in the hospital and superintending the cooking and distribution thereof. At that time the surgeon performed all clerical labor, prepared the medicines, compounded his own prescrip-

tions, in fact performed all those duties connected with the medical department which require intelligence and responsibility. At that time our pay may have been ample. But now all this has changed; gradually all these duties have been assigned to the steward, until at the present time nothing remains to be done by the Post Surgeon but visit the sick once daily, write the prescriptions and sign his name to the official papers and reports required of him.

This is all very well, the surgeon should not be hampered with all the minor details of his calling, he should have ample time for study and reflection, so that he may be able to keep abreast in the rapid advance which medical science is making in these days. At the same time it is no more than just that the pay of stewards should be increased in proportion to the increase of their duties and responsibilities, and their rank made commensurate with their calling and social condition. We do not want a liberal salary, nor a sinecure, if such a thing is possible for Hospital Stewards,—all we ask for is justice.

Apothecaries of the navy receive \$60 per month, yet their duties are not to be compared with those of the stewards, who, in addition to the great disadvantage in their pay as compared with the "apothecary," are changed from post to post more frequently than any other class of men in the army. As two-thirds of the stewards are men of family, their small savings, if they are able to make any, are absorbed during these frequent changes of station, and often their slender pay has to be mortgaged in order to obtain transportation for their families. To illustrate what straits they are often put to I will relate a case which came under my observation, and which would be amusing were it not a shame to the government which permits such a state of affairs to exist:

The wife of steward G— had been sick for two weeks; the soiled clothes of the family were laid aside the first week, as G. had no money to have the washing done. As his wife's health was no better the second week steward G. concluded to pitch in and do the washing himself; for this purpose he selected a day when he knew the Post Surgeon would be absent from the post, believing that then he would be more likely to finish his laundry duties without being discovered or interrupted. When his work was about half finished he was summoned in great haste to see one of the company laundresses. On visiting her he became convinced that in less than two hours there would be an addition to the family. Hastening back to the wash-tub he finished his work and returned to his post at the bedside of the woman and saw her safely delivered. (This same steward is now a prosperous druggist in Chicago, Ill.)

I could mention numerous instances of a similar nature if space permitted.

It is well known and conceded by all who are conversant with the facts that the Hospital Stewards, as a "class," are superior in knowledge and ability to any other class of enlisted men in the army. But at the same time we cannot close our eyes to the fact that worthless and incompetent men have, by favoritism and otherwise, obtained entrance to our corps.

The remedy for this lies in the hands of the government. No one should receive the appointment until a careful, systematic and impartial examination shall have determined his fitness for the position, and candidates should be limited to graduates of Pharmaceutical Colleges in good standing.

In order to bring about this desired reform it is absolutely necessary that our pay as well as our rank be increased; for it is absurd to suppose that good and capable men in civil life will come forward to compete for a position in the army, where, in nine cases out of ten, owing to the inferior rank, they will be compelled to surrender all manhood and self-respect and receive the pitiful sum of \$30 per month for a service for which, in civil life, they would receive double that amount, and at the same time be free and independent men, the value of which is not to be estimated in dollars and cents.

A HOSPITAL STEWARD.

April 4th, 1878.

## VARIETIES.

**Alkaloids of Opium, their Action.**—The well-determined opium alkaloids now number sixteen. The effect of any one differs from the rest or from that of opium itself. Dr. Isaac Ott ("Jour. Nervous and Mental Diseases," Jan., 1878), reports a large number of experiments which, added to our previous knowledge, enable him to draw the following conclusions:

1. Cryptopia is narcotic; excites and then depresses reflex action by an effect on the spinal cord, reduces power of motor nerves, abolishes sensation by an action on the spinal sensory ganglia and lowers the heart beat by an action on its muscular structure.
2. Thebaina is a spinal convulsivant, has no action on motor or sensory nerves or striated muscle. It reduces the heart beat by an action on that organ, and increases blood pressure by stimulating the cerebral vaso-motor centers.
3. Codeia is a narcotic and spinal convulsivant, produces a veratroid contraction of striated muscle and depresses the heart-beat by an action on the cardiac muscle.
4. Chlorocodiae is a tetanic agent.
5. Apocodeia produces vomiting, coma and death.
6. Narceina is soporific to cold blooded animals, but not to man, and is a spinal convulsivant; it does not destroy the motor nerves, as they act on thrusting a probe down the spine; it produces veratroid contraction of the muscle, and reduces the heart-beat by stimulation of the peripheral end of the pneumo-gastric.
7. Papaverina is narcotic and convulsivant, the convulsions being partly spinal and partly peripheral, the latter, it is highly probable, from an action on the muscle; it diminishes the heart's contractions by peripheral action on the cardio-inhibitory apparatus; it also causes veratroid contraction of the muscle.
8. Narcotina is non-narcotic and a spinal convulsivant, produces veratroid contraction of striated muscle and is a very active agent to decrease the beats of the heart by an action on cardiac muscle.
9. Cotarnina is soporific, and paralyzes, like curare, the motor nerves.
10. Hydrocotarnina is narcotic and convulsivant.
11. Hydrochlorate of cotarnamic acid is a convulsivant, and paralyzes the pneumo-gastric.
12. Laudanosina and laudanina are tetanic agents.
13. Morphia is a narcotic and spinal convulsivant; it produces veratroid contraction of muscle and reduces the heart-beat.
14. Oxymorphia has an action like morphia, only weaker.
15. Apomorphia is an emetic, excites and reduces spinal reflex excitability, and diminishes the number of cardiac contractions.
16. Meconin is narcotic to cold-blooded animals, but not in doses of two grains by the stomach in man; it causes hyperæsthesia and paralysis of voluntary motion with



general relaxation; it also produces a veratroid contraction. The opium alkaloids all have a dominant action on the nervous system, causing first increased exaggerated functions, and, if the dose is large enough, a paralysis of them. In the warm-blooded animals this action is both on the spinal cord and cerebrum.—*Detroit Lancet*, March.

**Thymol.**—The essential oils of thyme, of American horsemint and of the *Ptychotis ajowan* contain a substance, a homologue of phenol or carbolic acid, having the composition represented by  $C_{10}H_{14}O$ , and known as thymol. For more than two years this has been used by German surgeons, and is now being introduced among ourselves. It was discovered in 1719 by Caspar Neumann, examined chemically by Lallemand and Leonard Doveri, and first used to deodorize unhealthy wounds by Bouillon and Paquet, of Lille, in 1868. In 1875 several German surgeons published investigations of its antiseptic properties, which are estimated to be from 4 to 25 times as powerful under certain circumstances as those of carbolic acid. Thymol is a crystalline, nearly colorless body, with a pleasant odor and an aromatic burning taste. Its specific gravity is 1.028, and it melts at  $44^{\circ}C$ . It dissolves in 1,200 parts of cold water, 1 part of rectified spirit, 120 parts glycerin, and in  $\frac{1}{2}$  part of caustic alkalies. Fats and oils also dissolve it readily. It is prepared from the oils of either of the plants before mentioned, but pharmacists should beware of experimenting on English samples of oil of thyme, as but few of them are genuine, or, at least, contain any thymol. The oil is said to yield as much as 50 per cent. of thymol on the Continent. Thymol can be manufactured from these oils by treating them with an equal volume of a 20 per cent. solution of caustic soda, separating the alkaline liquid, and neutralizing with hydrochloric acid, when the thymol will float to the surface. It may also be obtained by submitting the oils to a low temperature for a few days, when the thymol crystallizes out. Its powerful antiseptic action, exceeding under some conditions that of carbolic acid, its small activity as a poison—about one-tenth of that of carbolic acid—and the absence of irritating effect when it is applied to the skin, all point to its use as a substitute for carbolic acid in the now well-known antiseptic treatment of surgical cases elaborated by Professor Lister. This substitution has been made with great success by Professor Volkmann, of Halle. For the spray solution, this gentleman uses a mixture of 1 part thymol, 10 alcohol, 20 glycerin, 1,000 water; but we understand that a solution in water only, which will not deposit, may be made by adding 1 part of thymol to 1000 of hot water. For the gauze dressings used by Professor Lister, others were substituted, made by saturating 1,000 parts of bleached gauze with a mixture of 500 parts spermaceti, 50 resin and 16 of thymol. This prepared gauze is extremely soft and pliant, and, to use the words of the reporter, sucks up blood and the secretions of a wound like a sponge. The fibres of the gauze being impregnated with spermaceti, cannot, of course, become saturated with the secretions, so that they do not become stiff. Thymol has been used for various skin diseases by Dr. R. Crocker, but the results of his experiments have not yet been published. As an internal remedy, thymol does not seem to make much way. It has proved useful in diseases of the stomach, accompanied by fermentation, and Mr. W. H. Stone reports in the "Medical Times and Gazette" that he has found it useful in cases of chorea, one form of

which is St. Vitus' Dance. The present cost of thymol is about five times that of the best carbolic acid, but as one part of the former seems to do as much work as 25 parts of the latter, the advantage of price is on the side of thymol.—*Chem. and Drug.* [London], p. 111.

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**Acetate of Lead in Large Doses in Post-Partum and Other Hemorrhages.**—According to Dr. Workman, acetate of lead, in drachm doses, acts as a uterine motor stimulant to cause firm contraction after delivery of the uterus, thereby preventing post-partum hemorrhage. In hemoptysis also, acetate of lead may be given in half drachm to drachm doses, with very prompt effect. It should be given in solution and the dose repeated, if necessary. No opium should be given with it. In these large doses the acetate of lead usually purges, and thus becomes eliminated from the system. Notwithstanding the prevailing opinion to the contrary, these large doses of acetate of lead are claimed by this author to be perfectly harmless. In corroboration of these statements a number of cases is cited which go to prove the truth of the above statements.—*Detroit Lancet*, March, from *Canada Lancet*, January 1, 1878.

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**Chloral for Removing Warts.**—A solution containing about twenty grains of chloral hydrate to the ounce of water is recommended by Dr. Craig as being effectual for the removal of warts. The operation is said to be painless.—*Detroit Med. Jour.*, Dec., from *Canada Med. Rec.*

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**The Eucalyptus Globulus.**—Professor Samuel Lockwood says, in the "Popular Science Monthly," that the *E. globulus* has earned, by fair experiment, its name of fever-tree, as a preventive, seems now to be settled. Its rapid growth must make it a great drainer of wet soils, while its marked terebinthine odor may have its influence, and it is highly probable that the liberation of this essence into the air stands connected with its generation of ozone. But, whatever the sanatory activities of the eucalypt may be, the fact is squarely settled that spots in Italy, uninhabited because of malarial fever, have been rendered tolerable by the planting of *E. globulus*, and it is believed that a more plentiful planting would nearly, if not quite, remove the difficulty.

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**The Eucalyptus in Algeria.**—Consul-General Playfair writes: "Formerly it was impossible for the workmen at the great iron mines of Mokta el Hadid to remain there during the summer; those who attempted to do so died, and the company was obliged to take the laborers to and from the mines every morning and evening, thirty-three kilos each way. From 1868 to 1870 the company planted more than 100,000 Eucalyptus trees, and now the workmen are able to live all the year through at the scene of their labors."

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**Extract of Pimentum as a Counter-Irritant.**—This preparation has been lauded by some French physicians as a valuable revulsive, not being so fugacious as mustard, nor so irritating as antimony or croton oil. It begins to act in from ten to thirty minutes, according to the delicacy of the skin, causing heat, a slight tingling

and redness, which go on increasing for about three hours, when they remain stationary. The plaster may be applied for eight to ten hours in children, and for twenty to twenty-four in adults. No great irritation capable of impeding occupation ensues, and it may be best compared with that of a sinapism arrived at half its power, and so maintained for the twenty-four hours.—*Med. Press and Circ.*, April 3.

**Destruction of a Turkish Industry.**—Kezanlik, the city of roses, which has not long been relieved from the presence of the marauding Cossack, was until lately the centre of the traffic in attar of roses; but the beautiful plain, with its vineyards and its clumps of walnut trees, and its great gardens of roses, has been passed over four times by alternate waves of battle. The march of armies and bivouacs of 100,000 men have ruined the gardens, and the town itself was lately burned, the Turkish part first, and then the Bulgarian part.

It has been suggested that India is quite able to supply the deficiency, but this is doubtful, and there is a significance in the fact that the price of "rose oil" has made a great leap upwards within the last few weeks, the best being quoted in the British market at 40 shillings per ounce, with every probability of a further advance. Dr. Septimus Piesse, an authority on all matters relating to perfumes, states the average yearly production of attar in the now devastated districts to have been as follows: District of Kezanlik, 1,736 pounds; Gucupso, 754 pounds; Karadja-Bahg, 384 pounds; Yeni-Saghra, 108 pounds; Zoaghra, 98 pounds; say a total of 3,470 pounds, or 55,520 ounces.—*Confectioners' Journal*.

**The Rain Tree.**—At a recent meeting of the Linnæan Society, Prof. Thistleton Dyer described the "rain tree" of Mogobamba, South America, under the name of *Pithecolobium saman*. The so-called "rain" is the fluid excreta of cicadas which feed on the juices of the foliage, and its dropping is therefore analogous to the "honey-dew" which sometimes drops from the leaves of lime-trees by the agency of aphides.—*Dublin Med. Press and Circ.*, April 17.

## MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, May 21st, 1878.

In absence of the President Mr. Ed. Gaillard was called to the chair, and Mr. J. L. Patterson was elected to act in place of the Registrar, who was engaged in other duty for the college. On motion the reading of minutes of last meeting was dispensed with.

Prof. Maisch exhibited a specimen of *crystallized chloral hydrate* which, when received in this country, two years ago, was colorless, but now had a uniform reddish tinge, intermixed with small spots of a deeper color; as the vial had never been opened all were at a loss to account for such a change.

A specimen of *spiegeleisen* (mirror-iron) was presented to the cabinet; it contains much carbon and manganium and is largely used in the manufacture of cast steel at the present time.

A paper by Mr. E. Gaillard, upon the *impurities of acetic acid* (see page 293), was read and discussed; it was suggested that the proposed test for nitric acid might be shortened by adding an equal bulk of sulphuric acid to the acetic acid and then the ferrous sulphate.

Mr. C. H. Cressler, of Chambersburg, Pa., communicated a paper upon the effects of the rhizome of *Aspidium marginale* (see page 290), and an additional note, by Prof. Maisch, was read describing the plants and rhizomes of the species mentioned, and of *Asp. filix mas*; the papers were accompanied with specimens of the plant and rhizome, sent by Mr. Cressler.

A paper by Mr. J. J. Brown, of Oakland, Cal., upon a *pill excipient*, was read (see page 289), recommending a compound glycerite of starch for the purpose. This induced a conversation upon the subject of glycerin as an excipient for pills, and attention was called to its tendency to absorb moisture, which rendered it unfit for pills containing deliquescent substances, unless an absorbent powder be added.

Prof. Remington exhibited a *graduated minim pipette*, improved by Dr. Squibb; it has a gum nipple attached to the dropping tube, and by immersing the latter in the liquid after pressing out the air the desired amount of liquid will be readily admitted and measured, and can at once be dispensed on again pressing upon the nipple. It is found most convenient to keep such graduated minim pipettes in a wide-mouthed bottle, partially filled with water, thus insuring constant cleanliness. Several of the members present spoke of the superiority of these pipettes over the ordinary minim measures.

There being no further business, on motion, the meeting adjourned.

J. L. PATTERSON, Registrar pro tem.

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## PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

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**Philadelphia College of Pharmacy.**—The Committee on Instruction of the Board of Trustees have had under consideration, for some time past, the advisability of establishing a graded course of instruction. During the past winter the number of students in attendance was so large that the Hall Committee had to provide more seats for their accommodation, in consequence of which nearly all the available space has been occupied by benches. The subject of increased and still better accommodations for the students and the organization of a graded course having been repeatedly before the Board, that body, early in January last, referred the whole subject to the Committees on Instruction and on Property, in conjunction with the professors, and a plan was matured which has received the sanction of the board. Although it will require some time yet to arrange all the details, we may mention the following outlines:

1. The instruction to the junior and senior students will be arranged, with perhaps slight modifications, according to the plan which received the sanction of the "Conference of the Schools of Pharmacy," in 1876 (see "Amer. Jour. of

Pharm.," 1876, p. 471); in the junior department, therefore, the elementary branches will be taught, which will hereafter be omitted from the senior course, thus affording more time in the latter for necessary details and a more extended range of instruction.

2. There will be six lecture hours per week for each class, the same as for the undivided class heretofore. The lectures to the two classes will be on alternate days so as to afford the professors ample time for preparing the necessary specimens, apparatus and experiments in illustration of the lectures.

3. Near the close of February an examination of the junior students will be held; the examination for the degree of Ph.G. will, as heretofore, take place early in March.

4. For admission to the senior course the juniors will be required to successfully pass the examination in *each* branch; those failing in one or more branches, in February, will be granted another examination towards the end of September previous to the beginning of the lectures. Students who have attended one course of instruction in some other College of Pharmacy, before entering the senior course, will be required to prove that they have passed, at such college, an examination in all the branches taught to the juniors, or submit to the examination in the autumn.

5. Students who, previous to the beginning of the lectures in October next, may have attended one full course of lectures in this or another College of Pharmacy, will be entitled to admission to the senior course without previous examination, up to and including the lecture course for 1880-1881.

It will be observed that the adopted modifications in the instruction will vastly increase the labors of the professors, but at the same time afford the students still greater inducements for systematic study and the opportunity of obtaining a more thorough professional education than heretofore.

At the annual meeting of the college, held in March, the subject of a social reception to the members of the college and their ladies had been introduced, and referred to the Board of Trustees, who appointed a committee to make proper arrangements. In the afternoon of May 21st the last pharmaceutical meeting of the session was held, and the evening of the same day had been selected for the reception. About an hour and a half was occupied by Prof. Remington in experimenting with and explaining the use of the oxhydrogen lantern as a means of instruction, and in projecting upon the screen photographic views of landscapes, buildings, works of art, portraits, etc., after which the company repaired to the museum. This had been handsomely decorated with flags and exotic plants from the hot-house of Dr. G. B. Wood, the extensive collections of the college were exposed to view, and in the adjoining library Prof. Maisch's flower garden had been arranged, consisting of the large models of flowers imported a few years ago and used in illustrating his lectures. The centre of the museum hall was occupied with the tastefully arranged refreshments provided for the occasion; a piano had been procured, and music and conversation were indulged in until the company separated. The reception was well attended by ladies, and appeared to please all present to such a degree that many expressed the hope that similar reunions of the members of the College might be arranged from time to time.



**Massachusetts College of Pharmacy.**—The tenth annual commencement was held last month, in the hall of the Institute of Technology, and was largely attended. After an address by the president, Mr. S. A. D. Sheppard, in which he paid a tribute of respect to the late Ashel Boyden and Daniel Henchman, the first president of the college, the diplomas were conferred upon the following graduates:

Jonathan Marshall Colcord, Mass., *Dialyzed Iron*; Charles Dwight Cooke, Mass., *Analysis of Damiana*; Herbert Augustus Curtis, Mass., *Salicylic Acid*; Edmund Culver Danforth, Mass., *Sodii Sulpho-Carbolas*; Frederick Arthur Hartshorn, Mass., *Saccharated Pepsin*; Charles Huestis Hyde, Vt., *Coffee*; Charles Kenneth Short, N. B., *Petroleum and some of its Products having Pharmaceutical Interest*.

The valedictory addresses were delivered on the part of the faculty by Prof. W. P. Bolles, M.D., and in behalf of the graduating class by Mr. J. M. Colcord. After the audience was dismissed, the members of the College, together with their ladies and invited guests, repaired to the Hotel Brunswick, where they partook of the annual dinner.

At the annual meeting held May 2d, the following officers were elected: President, L. C. Flanagan; Vice Presidents—W. W. Bartlett and C. P. Orne; Secretary, S. A. D. Sheppard; Treasurer, John C. Lowd, and Auditor, E. S. Kelly.

**Alumni Association of the Massachusetts College of Pharmacy.**—An adjourned meeting was held on the evening of May 21st, to act upon some proposed amendments to the constitution; afterwards the Association sat down to the annual supper.

**The New Jersey Pharmaceutical Association** held its eighth annual meeting in Library Hall, Elizabeth, on Wednesday, May 15th. The meeting was called to order at 10.45 A. M. by the President, Mr. C. B. Smith, who introduced Dr. Green, the mayor of the city. His honor addressed the Association, extending a hearty welcome to the members. The President, on behalf of the Association, returned thanks for the kindness shown.

After reading the annual address by the President, the following officers were elected for the ensuing year: President, Randolph Rickey, of Trenton; Vice Presidents—A. S. White, of Mount Holly, and Robert Eastburn, of New Brunswick; Treasurer, William Rust, of New Brunswick; Recording Secretary, A. P. Brown, of Camden; Corresponding Secretary, R. W. Vandervoort, of Newark; Standing Committee—A. S. White, *ex-officio*, of Mount Holly; Chas. Holzhauer, of Newark; Richard Frohwein, of Elizabeth; Bunting Hankins, of Bordentown, and Franklin Dare, of Bridgeton.

Several papers of interest were read by members.

Princeton was decided on as the place for the next annual meeting, and it was also decided to hold a two days' session; the first day for business, the second to be devoted to reading answers to queries and volunteer papers. A number of new members were elected, and the Publishing Committee were directed to have five hundred copies of the proceedings of 1878 printed, and to send a copy to every druggist in New Jersey. At 5 P. M. the meeting adjourned, the members well pleased with the work of the day.

**Pennsylvania Pharmaceutical Association.**—The druggists and pharmacists of Reading have held several meetings to secure proper accommodations for this State Association, which will meet there June 11th, at 11 A. M. The American Hall has been selected as the place of meeting, and the American House as headquarters, both located at Fourth and Penn streets.

The Secretary, Dr. J. A. Miller, of Harrisburg, has informed us that he has endeavored to notify by circular every druggist and pharmacist in the State; however, since the notice cannot have reached many who are eligible to membership, we insert here Chap. II, Art. I, of the by-laws, which is as follows:

“Every pharmacist and druggist of good moral and professional standing, whether in business on his own account, retired from business, or employed by another, and those teachers of pharmacy, chemistry and botany, who may be specially interested in pharmacy and materia medica, are eligible to membership.”

The objects of the Association are expressed in the following Art. II, of the constitution:

“The aim of this Association shall be to unite the educated and reputable pharmacutists and druggists of the State; to improve the science and art of pharmacy, and so restrict the dispensing and sale of medicines to regularly educated druggists and apothecaries.”

The initiation fee is \$2; the annual contribution, \$1. Applications for membership may be addressed to the Chairman of the Executive Committee, Chas. H. Cressler, Chambersburg. We have learned from the Assistant Secretary, J. H. Stein, of Reading, that by May 15, besides the members, about sixty druggists had signified their intention to be present, and it is hoped that all who are eligible will join, and, if possible, attend the meeting.

**Louisville College of Pharmacy.**—At the annual meeting held in March the Board of Directors was elected to serve the ensuing year, and afterwards organized as follows: President, C. Lewis Diehl; Vice Presidents, Emil Scheffer and Vincent Davis; Recording Secretary, Fred C. Miller; Corresponding Secretary, C. Tafel; Treasurer, Edward C. Pfingst; Curator, R. Snyder; Directors—John Colgan, John Newman, C. J. Schranz, Jas. A. McAfee and W. W. Smith.

The College had twenty-nine students at the session just closed, five of whom, having passed the examination, received the Degree of Graduate in Pharmacy. The College has just removed to a commodious building of its own, which was purchased last April. The building is situated on one of the principal streets of the city, accessible from all parts of the city by street railway, and within two squares of the post-office and custom-house.

Professor Scheffer has just commenced his lectures of the practical course in Botany to a class of nineteen students, in the new building of the College.

**Pharmaceutical Society of Paris.**—At the session held April 3d, Mr. Méhu presiding, Mr. Marais directed attention to *subnitrate of bismuth*, which he had recently found to contain lead. The recent researches of Carnot were described by Mr.

Poggiale, according to which 10 or 20 grams of the subnitrate are dissolved in boiling hydrochloric acid, and the solution evaporated nearly to syrupy consistence; a little more acid is added to render the residue fluid, and then several drops of sulphuric acid and 30 or 40 cc. of alcohol. If not sufficiently concentrated, the liquid may become turbid from the partial decomposition of the bismuth chloride, and must be rendered clear by a little hydrochloric acid. After standing for a day, the precipitate is collected upon a small filter, washed with alcohol acidulated with hydrochloric acid, afterwards with alcohol and dried. The filter is first incinerated, then the precipitate is added, moistened with sulphuric acid, heated to redness and the remaining sulphate of lead weighed. In this way he obtained from seven samples sulphate of lead corresponding to between .011 and .098 metallic lead.

Mr. Petit presented a specimen of the alkaloid from *Duboisia myoporoides*, and described its properties (see "Am. Jour. Phar.," May, p. 267). Mr. Lefort suggested that the dichroism of the alkaloid might be due to some impurity. Mr. Petit will continue his investigation.

A note by Mr. Burcker was read, describing a carbonate of uranium and ammonium, and a method for separating the oxides of iron and uranium.

The observations of Mr. Duhomme, that the presence of creatin and creatinin accounted for the anomalous behavior of saccharine urine to Fehling's solution, created some discussion, and led to the appointment of a committee charged with investigating this subject.

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## EDITORIAL DEPARTMENT.

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**The "Homes" of Pharmaceutical Colleges.**—It is well nigh on to fifty years when the Philadelphia College of Pharmacy determined to secure a permanent home and erected a building on Zane (now Filbert) street, which is still standing, but was sold ten years ago, when the present larger and more commodious hall was erected. Half a century ago, pharmaceutical education in the United States was in its infancy, and it may well have been regarded as a hazardous undertaking on the part of the College to incur a debt which must have weighed heavily upon the then young institution, and for the discharge of which there was then but a slim prospect. We well remember the satisfaction of every member present on the occasion, when one of the most faithful officers of the College reported the result of a life-long service that the institution was free from debt, and thus, freed from a burden, was enabled to look around for more comfortable quarters, the necessity for which had gradually become more apparent.

About a year ago the Maryland College of Pharmacy procured a suitable building, and a few months ago we had the pleasure of chronicling the purchase of a building by the New York College of Pharmacy, which had been seriously crippled by a long law-suit with one of its early members, which, however, was ultimately decided in its favor. And in the present issue we are pleased to record the fact that one of the youngest—the Louisville College of Pharmacy—has followed suit, and secured for itself a permanent "home!"

The pleasing feature in connection with these evident signs of progress is that no aid was asked or received from the cities or States wherein the institutions are located, but that the result has been reached through the liberality of the members and friends of the colleges. We sincerely wish that the other colleges of pharmacy may soon be in a similar position, and secure for themselves that comfort which *can only be found in a "home."*

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The Pharmaceutical Examining Board of Philadelphia have recently presented the following report to the Mayor of the city:

*To the Honorable William S. Stokley, Mayor:*

The Pharmaceutical Examining Board respectfully report that from January 1st, 1877, to April 22d 1878, forty applicants for examination and registration as proprietors of retail drug stores were examined as to their qualifications for conducting the apothecary business. Of this number twenty-six were passed by the Board and duly registered, the remainder being unfitted for the responsible duties of dispensers of poisons and physicians' prescriptions.

Eighty-six clerks appeared before the Board during the same period, of whom sixty-nine received certificates of "Qualified Assistant," authorizing them to be left in charge of a store during the temporary absence of the proprietor. Those who fail to pass a satisfactory examination are granted a second one after the expiration of three months.

The names of seventy-seven retail druggists have been added to the register being entitled thereto, without examination, on account of being graduates of an incorporated college of pharmacy, "whose diploma is based upon a regular term of service in the drug and apothecary business."

The total number of individuals now registered as proprietors of retail drug stores is 692, and 397 qualified assistants have received certificates since the organization of the Board on April 29th, 1872.

The census of drug stores taken last year by your patrolmen developed the fact that over one hundred proprietors were violators of the law in not being registered, and shows the advantage that would arise from an annual inspection of a like character. Notification from the City Solicitor induced the delinquents to apply for examination or registration.

With this report the term of the present Board of Examiners expires by limitation of the Act of Assembly, and they trust that their successors whom you appoint will be enabled to discharge the responsible duties of the position with impartiality and fidelity, so as to assure that protection to the public from incompetent pharmacists which was the object of the law.

Subsequently the Mayor appointed the Board to serve for the next three years, as follows: Messrs. Jas. T. Shinn, Chas. L. Eberle, Rob. England, B. L. Smedley and Wm. C. Bakes. Three of the gentlemen were members of the original Board, appointed in 1872, and have served in that capacity without interruption. It is a well-deserved compliment paid to them by the appointing power. One of the appointees has served for some time on the second Board after the resignation of Mr. Marks, and the fifth gentleman enters for the first time upon these duties.

The Board was organized by electing Mr. Eberle President and Mr. Bakes Secretary.

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**Pharmaceutical Legislation in Pennsylvania.**—The way by which some drafts of laws become the objects of general interest, and acquire historical fame, must be dark indeed. Early in the present year a bill was introduced into the Legislature by Hon. Mr. Ringgold, of Philadelphia, with the avowed object of "regulating the practice of pharmacy and the sale of poisons in the State of Pennsylvania." We have had the privilege of examining that bill after the "Committee on Vice and Immorality," to which it had been referred, had passed judgment on it and, in legislative parlance, had "killed" it. The bill was, indeed, a proper subject for the con-

sideration of the committee named, because, under the disguise of an honest purpose, it displayed a tendency which could not have been better hidden if the bill had been drafted by those whom it would have benefitted, namely, the vendors of diplomas. The main feature of the bill was that no one should be allowed to commence the business of an apothecary, except after showing a diploma to the clerk of a certain court and being registered. No inquiry into the character of the diploma or of the institution granting it was provided for; the passage of the bill would have secured a harvest for diploma mills at home and abroad.

After the defeat of this bill another one was brought forward which, particularly from the second "whereas," leads to the supposition that it emanates from the same source that fathered the first one. This time it was prefaced by an article full of misrepresentations, which had been furnished to and published by a daily paper, and has recently been reproduced, with slight modifications, by a weekly. We now regret that we did not take a full copy of the first bill referred to, but this second one, we think, equally deserves to be preserved, inasmuch as it was printed together with the article referred to above. It is as follows:

At a meeting of the Independent Apothecaries of the city of Philadelphia, held on February 28th, 1878, it was unanimously resolved to lay this matter before the Legislature, and to request that the following bill, which was drafted by a member of the Philadelphia Bar, may be enacted into a law, or a general law passed for the whole State:

#### AN ACT

*To repeal the "Act to Regulate the Practice of Pharmacy, and Sale of Poisons, etc., in the City of Philadelphia, approved April 4th, 1872."*

WHEREAS, The Act to Regulate the Practice of Pharmacy, and Sale of Poisons, etc., in the City of Philadelphia, approved on April 4th, 1872, being only a *local* law establishing a "Pharmaceutical Examining Board," should be abolished.

AND WHEREAS, The Act relative to the Sale of Academic Degrees, approved on May 19th, 1871, is a *general* law, and affords ample protection to all the people of all parts of the State of Pennsylvania. Therefore,

SECTION I. *Be it enacted, etc.,* That the "Act to Regulate the Practice of Pharmacy, and Sale of Poisons, etc., in the City of Philadelphia, approved on April 4th, 1872," be and the same is hereby repealed.

### OBITUARY.

PROFESSOR JOSEPH HENRY, well known as the Secretary of the Smithsonian Institution, and one of the most distinguished scientists in the United States, died in Washington, D. C., May 13. He was born in Albany, N. Y., December 17, 1797, became a watchmaker, civil engineer and afterwards professor of mathematics in the Albany Academy. He then directed his attention to physics, and more particularly to electricity and magnetism, in which he made several important discoveries. He had held the chair of natural philosophy at Princeton College for fourteen years, when, in 1846, he was called to Washington to draw up a plan for the organization of the Smithsonian Institution, and was subsequently elected secretary or director of it, an office which he held ever since. He served the general government, without extra compensation, as chairman of the light-house board and in other capacities. He was President of the National Academy of Sciences and of the American Association for the Advancement of Education, and he organized a system of volunteer meteorological observations, which subsequently became the basis on which the weather bureau was organized.